A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON ANTICOAGULANT DRUG COMPLIANCE AMONG PATIENTS WITH MECHANICAL HEART VALVE IN GKNM HOSPITAL, COIMBATORE

Reg. No: 301212302

A DISSERTATION SUBMITTED TO THE TAMIL NADU Dr. M. G. R MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

April 2014

A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON ANTICOAGULANT DRUG COMPLIANCE AMONG PATIENTS WITH MECHANICAL HEART VALVE IN GKNM HOSPITAL, COIMBATORE

Reg. No: 301212302

Approved by

EXTERNAL **INTERNAL**

A DISSERTATION SUBMITTED TO THE TAMIL NADU Dr. M. G. R MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

April 2014

CERTIFICATE

This is to certify that the dissertation entitled "**A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON ANTICOAGULANT DRUG COMPLIANCE AMONG PATIENTS WITH MECHANICAL HEART VALVE IN GKNM HOSPITAL, COIMBATORE"** submitted to the Faculty of Nursing, The Tamil Nadu Dr. M.G.R Medical University, Chennai. It is the bonafied work done by Reg. No: **301212302** in partial fulfilment of the requirement for the award of the degree of Master of Science in Nursing, Branch 1 Medical Surgical Nursing, Sub Specialty-Cardio Vascular and Thoracic Nursing, during academic year 2013-2014

Prof. JAENY KEMP M.Sc (N)., Ph.D(N).,

Principal,

Institute of Nursing,

G. Kuppuswamy Naidu Memorial Hospital,

Coimbatore-641037,

Tamil Nadu

A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON ANTICOAGULANT DRUG COMPLIANCE AMONG PATIENTS WITH MECHANICAL HEART VALVE IN GKNM HOSPITAL, COIMBATORE

APPROVED BY THE DISSERTATION COMMITTEE IN MAY 2013

1. RESEARCH GUIDE: ...……..

Prof. JAENY KEMP, M.Sc. (N)., Ph.D(N).,
Principal,
Institute of Nursing,
G.Kuppusawamy Naidu Memorial Hospital, Coimbatore37.

2. **SUBJECT GUIDE:** ……..

Prof. DEBORAH PACKIAJOTHI, M.Sc(N).,
M.Sc (N) coordinator & H.O,D,
Institute of Nursing,
G. Kuppuswamy Naidu Memorial Hospital, Coimbatore37.

3. **CO- GUIDE :** ……..

Mrs. ANNIE FRIEDA M.Sc(N).,
Lecturer,
Institute of Nursing,
G. Kuppuswamy Naidu Memorial Hospital, Coimbatore37.

4. MEDICAL GUIDE : ……

Dr. SUNDAR RAMANATHAN., M.S., M.ch(Thor).,
FRCS(Ed).,FRCS (CTh).,
Consultant Cardio Thoracic Surgeon,
Department of Cardiovascular and Thoracic Surgery,
G. Kuppuswamy Naidu Memorial Hospital, Coimbatore37.

A DISSERTATION SUBMITTED TO THE TAMIL NADU Dr. M. G. R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

April 2014

ACKNOWLEDGEMENT

"The LORD is my strength and my shield; my heart trusts in him, and I am helped." "My heart leaps for joy and I will give thanks to him in song".

Psalm 28:7

At the very outset, I the investigator of the study thank the **Lord Jesus Christ** with my whole heart and soul for, His abundant continuous grace and blessings which served as the source of my strength and faith in each and every step throughout this endeavour.

With much gratitude I would acknowledge my heartfelt thanks and gratitude to **Dr.Ramkumar Raghupathy, M.S(Gen Surg)., M.Ch(Paed Surg)., FIAPS., MBA (Hospital Management).,** the Dean for giving me the opportunity to utilize the facilities at GKNM Hospital.

I am extremely grateful to **Prof. Jaeny Kemp, M.Sc(N)., Ph.D(N).,** Principal, Institute of Nursing, GKNM Hospital. A benevolent personality, for her valuable guidance, encouragement and continued support with sincere interest.

I express my humble gratitude to **Dr. Sundar Ramanathan, M.S., M.Ch(Thor)., FRCS(Ed)., FRCS(CTh).,** Consultant Cardio Thoracic Surgeon, Department of Cardiovascular and Thoracic Surgery, GKNM Hospital, for his expert guidance and his immense patience, special care and encouragement which made the study a fruitful and successful one.

My deepest gratitude to my guide and respected teacher **Prof. C Deborah Packiajothi, M.Sc(N).,** HOD of Medical and Surgical Nursing and M.Sc(N) Coordinator, Institute of Nursing, GKNM Hospital, for her expert guidance, valuable suggestions, constructive criticisms, and constant encouragement given throughout the period of study.

I extend my heartfelt thanks to **Mrs. Annie Frieda M.Sc(N).,** Lecturer, Institute of Nursing, GKNM Hospital, for being a constant guiding spirit, her consistent encouragement throughout this study and never-ending willingness to provide assistance strengthened me to accomplish this work.

I express my sincere gratitude to our Statistician **Dr. P.K Sivakumaran, M.Sc., MBA., M.Phil., Ph.D.,** for his tireless effort that was sustained with major commitments and furious energy bonded with incredible patience in completing the statistical procedures.

I feel fortunate to express my heartfelt thanks to **Prof. Viji. P, M.Sc(N)., Ph.D(N)., Prof. Shanthi. P, M.Sc(N)., Mrs. C. Meenakumari, M.Sc(N)., and Mrs. Revathy. P, M.Sc(N).,** Lecturers, in the Department of Medical Surgical Nursing, Institute of Nursing, GKNM Hospital, for giving judgments, insightful comments, valuable suggestions and constructive criticism at different stages of my work.

I express my sincere gratitude to all **Subject Experts** from the GKNM Hospital and other Nursing Institutions for validating the tool of the study. They were kind enough to go through my tool and guided me in the direction to proceed.

A memorable note of thanks to **Mrs. Indira Gandhi, M.A., MLIS.,** Librarian, Institute of Nursing, GKNM Hospital, for her kind co-operation and timely help.

I would extend my special thanks to **Mrs. Anuradha Ramakrishnan, M.A. English., M.Ed.,** Lecturer, Institute of Nursing, GKNM Hospital for editing the content for the manuscript.

I extend my gratitude to **Mrs. Tamilselvi, P.C.B.Sc(N).,** Senior Nursing Tutor, Institute of Nursing, GKNM Hospital, for Tamil translation and editing the content for the manuscript.

I am extremely grateful to all the **Staff Nurses** of cardiothoracic wards at GKNM Hospital.

I thank each and every **Patients** who participated in the study and extended their cooperation throughout the data collection period.

My affectionate thanks to my Family members especially my **Mother, Uncles, Aunties, Brothers and Sisters** for their prayers, help, love and support instilled in me that made this work a reality.

With a sense of deep gratitude, I acknowledge all my **classmates** for their sincere concern, help and contributions towards this effort.

I wish to express my appreciation, thanks and well wishes to **Ms. Manimozhi** for her help, in the Tamil translation.

My special thanks and gratitude to all my lovable **Friends & GNM students** of Institute of Nursing, GKNM Hospital for their valuable help, appropriate corrections and thoughtfulness.

I wish to express my appreciation and well wishes to my Brothers **Mr. Shajin prabhu, M.E., & Mr. Astin Prabhu, B.Sc.,** for doing the Tamil typing.

I thank **Mr. Kumaran, Computer Park,** for the professional help which made me to bring this manuscript clearly, legibly and effectively.

My sincere gratitude and thanks to all those who had directly or indirectly helped in successful completion of this study.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABSTRACT

A quasi experimental study was conducted to "Assess the Effectiveness of Structured Teaching Programme on Anticoagulant Drug Compliance among patients with Mechanical heart Valve in GKNM Hospital, Coimbatore''**. Objectives: 1**.To assess the knowledge of patients with mechanical heart valve on anticoagulant drug compliance. **2**. To compare the pre test and post test knowledge level regarding anticoagulant drug compliance among patients with mechanical heart valve**. 3.** To find the association between pre test knowledge score and selected demographic variables among patients with mechanical heart valves. **Research design:** Quasi experimental one group pretest-posttest design. **Setting:** Cardiothoracic wards of G. Kuppuswamy Naidu Memorial Hospital, Coimbatore **Samples:** thirty subjects were selected who fulfilled the criteria.**Conceptual framework:** Modified conceptual framework of Context Input Process product model of Daniel Stufflebeam (1983)was used. **Sampling techniques:** Non probability-Convenient sampling technique **Methods:** Structured interview questionnaires were used to assess the demographic variables and Knowledge level of patients about Anticoagulant Drug Compliance. Pre test was conducted on the 4^{th} day of surgery followed by structured teaching programme was administered on an individual basis. Post test level of knowledge was assessed on the 8^{th} post operative day or on the day of discharge. Outcomes were evaluated by descriptive and inferential statistics. **Results:** The mean difference of levels of knowledge was 7.37, with the combined SD of 3.41 and 't' value of 11.84 Paired't' test showed that there was a significant difference in pre test and post test level of knowledge on anticoagulant drug compliance. This finding indicates that the structured teaching programme on anticoagulant drug compliance among patients with mechanical heart valve was effective in improving the knowledge level. There is mild or negligible association between the level of knowledge on anticoagulant drug compliance and demographic variables. **Conclusion:** The findings of the study proved that the education intervention is very effective in improving the knowledge on anticoagulant drug compliance among patients with mechanical heart valve. Hence the structured teaching program can be implemented by the nurses of cardio thoracic units on a regular basis.

CHAPTER - I

INTRODUCTION

"Our hearts are the core of whom we are,

Within their deeper essence are to be found all those qualities

That makes us to feel fully alive and connect us to our profounder humanity."

Dr.Serge Beddington

The heart is considered to be the seat of soul, center of courage, treasure of love and affection, abode for soul. All these are nearly literary expressions and not far away from physiologic truth. In fact, heart is the nonstop pump, which maintains circulation of the life sustaining blood to each cell of the body. Heart beat represents life and lack of it pronounces death due to cardiovascular disease **(Tortora G, J. 1996).**

In a healthy human being there are four heart valves. Valves help in maintaining proper blood flow by keeping the blood moving smoothly and efficiently in the right direction. Heart is made up of four chambers, the upper chambers are called right and left atrium, the lower chambers are called right and left ventricle. Heart valves are located inside the heart which controls flow of blood from one chamber to other. Timely opening and closing of valves allows the heart to pump blood smoothly & effectively. Any abnormality in the heart valve will result in increased workload of heart allowing blood to flow in opposite direction. Thus the four valves of the heart are meant to last through millions of heart beats.

A damage or defect in any one of the four heart valves mitral, aortic, tricuspid or pulmonary is termed as valvular heart disease.

Valvular heart diseases are present either at birth, or occur later in life after an infection.

The tricuspid and mitral valves control the blood flow between the atria and the ventricles. The pulmonary valve controls the blood flow to the lungs and from the

heart, and the aortic valve regulates the blood flow between the aorta and heart, and to the rest of the body's blood vessels.

When the valve is stenosed it forces the blood back to the adjacent heart chambers, and an incompetent valve allows back flow of blood. To compensate for the poor pumping action, the heart muscle thickens, enlarges losing its elasticity and efficiency. In some cases, there is a greater tendency of the blood to get pooled with the chambers, which increases the risk of pulmonary embolism or stroke.

The valvular heart disease severity varies from person to person. There may be absence of symptoms, in some cases and it may lead to complications like congestive heart failure. Treatment depends upon the type and extent of the disease. Corrective surgeries such as heart valve repair or replacement restores or replaces a defective heart valve **(Hesiler, Jennifer. 2012).**

In the United States alone there were about 70,000 heart valve replacement procedures performed yearly for conditions like mitral valve stenosis secondary to rheumatic fever and calcified aortic stenosis in elderly patients **(Women's Heart foundation. 2007).**

In Europe around 50,000 valve repair and replacement procedures takes place annually **(Eric G., et al 2005).**

In heart valve replacement surgery the badly damaged valve is replaced with a mechanical valve which is made of metal or plastic, or a bio prosthetic valve derived from pig tissue. The damaged valve is removed and the new valve is sewn into place **(E, Thompson, Gregory. 2010).**

A tissue valve is made from animal tissue and is replaced in human hearts. These are chemically treated for safety and are specially prepared for the human since they are weak; they are reinforced and supported with a frame or stent to make the valve stronger. When the valves aren't reinforced they are known as stent less valves**.**

In the elderly patients these valves last, on an average of 10-15 years. In active, younger patients, these valves wear out faster **(Aortic valve replacement. 2007).**

Homograft valve is taken from a human donor. These donor valves are replaced in patients with aortic valve defects. These valves remain a better choice for pregnant women and children because they do not require a lifelong anticoagulation therapy. Durability is same as that of a tissue valve. But are rarely, taken from the pulmonic valve of patient's**.**

Allograft valves are taken from pig's aortic valve and treated chemically before putting it into a human heart. The life span is about 7-15 years. Due to its shorter life span it is used only for older age group **(Medwiki. 2012).**

Mechanical valves are made to last lifelong for all patients. They do not wear out or break down; its durability is tested using mechanical wear analysis. They offer a competitive hemodynamic performance. Mechanical valves allow patients to continue the same level of activity throughout their lifetime.

In a follow-up study of 2,444 St. Jude Medical mechanical heart valve patients for 15 years. Majority of them were able to perform their daily routine activity and had a better quality of life as same as that of the general population **(SJM Worldwide. 2010).**

Mechanical heart valve patients are more likely to develop blood clots in the heart when compared to bio prosthetic heart valve. The blood clots may break loose, travel to the brain and cause stroke. A patient who receives a mechanical heart valve to treat severe valvular heart disease, needs to take anticoagulants for life time in order to prevent clot formation **(E. Gregory Thompson. 2010).**

Anticoagulants are medications that prevent the blood from clotting as effectively as the natural processes are also known as blood thinners.

Warfarin was the anticoagulant drug prescribed to most of the patients during 2013.Now the National guidelines recommends using the other anticoagulants such as acenocoumarol, phenindione, Dabigatran, apixaban and rivaroxaban which has similar side effects of warfarin **(Tim., and Jenny. 2013).**

The common side effect of warfarin is haemorrhage; other complications are hypersensitivity or allergic reactions like urticaria and anaphylactic reactions,

vasculitis, nausea, vomiting, diarrhoea, taste perversion, abdominal pain, flatulence, bloating, rash, dermatitis, pruritus, alopecia, tracheobronchial calcification hepatitis and elevated liver enzymes. Cholestatic hepatitis was associated with administration of Warfarin sodium and ticlopidine.

Thromboembolism and anticoagulant related bleeding are still the most common complications in mechanical heart valve patients. Physicians and nurses should educate patients about signs and symptoms of bleeding and ask them to report immediately if signs and symptoms occurs. Self-management of oral anticoagulants helps to prevent the occurrences of major complications. Studies found that self-managed oral anticoagulant therapy have a better treatment quality than patients in conventional oral anticoagulant therapy **(Wysowski ., et al 2007).**

NEED FOR THE STUDY

The heart is known as the epicentre of all our new ideas, emotions and inspirations. It starts working on the 21st day of conception in mother's womb and goes on till the last breaths of life. It keeps pumping the blood to the cells of human body, spending sleepless nights and days and works throughout life time **(Deepak. 2010).**

Heart disease is the leading cause of death affecting both women and men. According to the World Health Organization nearly 17.5 million lives are lost due to heart disease worldwide. The Indian's are running fast as American and others. World Health Organization estimated that about 60% of the total world's cardiac patient will be Indians; American's are also leading in the list issued by World Health Organization **(Dipak, 2010).**

Around 600,000 Americans die due to heart diseases every year, that's nearly 1 in every 4 deaths. **(CDC**, **National Vital Statistics System and the U.S. Census Bureau, 2013)**

Aortic stenosis and mitral regurgitation affects the older population around 4 to 5 percentages **(Wikipedia. 2013).**

Between 1964 and 1995, 306 patients underwent valve replacement for left-sided native (209 patients) or prosthetic (97 patients) valve endocarditis. Mechanical valves were implanted in 65 patients, bio prostheses in 221 patients, and homograft's in 20 patients. **(Marc R., et al 2001)**

A survey was conducted in Great Britain and Ireland by the Society for Cardiothoracic Surgery to plan the national requirement for catheter-based conventional procedures. Over 5 years 41,227 patients underwent aortic valve surgery the in-hospital mortality is 4.1%. The total number increased from 7396 in 2004-2005 to 9333 in 2008-2009, aortic Stenosis (62.4%-65.1%), octogenarians (13.6%-18.4%), high-risk patients (24.6%-27.7%), and for biological valves (65.4%-77.8%). About 1.2% had permanent cerebrovascular accident, 4.5% had dialysis; 6.6% Underwent reoperation due to bleeding. In 2004-2005, 4.4% of mortality is decreased to 3.7% in 2008-2009. Survival to a mean follow-up of 2.5 years was 89**% (Joel., et al 2011).**

Degenerative valve disease is a growing concern due to the rising amount of valve replacement surgeries among the elderly. More than 300,000 prosthetic heart valve surgeries were performed each year worldwide, and this rate is projected to increase to as many as 850,000 per year by 2050. There is a higher risk of thromboembolic events following heart valve surgery; to which anticoagulation and antiplatelet therapies are necessary. The drug selection depends on the type of surgery performed and the individual risk in any given situation. This article assessed the benefit and risks of various therapy schemes as recommended by the Czech, European and American Associations of Cardiologists and Cardio surgeons. **(Benesov, M. 2011).**

Among cardiac valve replacement surgeries, approximately 60 percent receive mechanical valves composed of carbon alloys with a bileaflet or tilting disk design. About 40 percent patients received bioprosthetic valves, which may be pulmonary autografts, homografts, or heterograft's **(Gerard p., et al 2013).**

According to the survey conducted by the centre for National Health Statistics, about two third of valves were reported as mechanical. About two thirds of both mitral and aortic valve implants were reported as mechanical **(D.Garver., et al 1995).**

Main complications following heart valve surgeries include: bleeding, left and right ventricular failure, pulmonary hypertension, conduction abnormalities like arrhythmias, infective endocarditis and sudden death **(Seiler Christian. 2004).**

Warfarin is the most commonly prescribed oral anticoagulant therapy in the United States. It is effective for the prevention and treatment of thromboembolism in the setting of prosthetic heart valves, atrial fibrillation, and myocardial infarction. As there was increase in the aging of United States population, the number of patients treated with warfarin has continued to increase. In 2004 alone, the number of outpatient prescriptions for warfarin was around 31 million. Approximately 4 million outpatients in the United States and 7 million patients worldwide are receiving long-term oral anticoagulant therapy, using warfarin or Coumadin**. (Edith A., et al 2011).**

The primary complication of anticoagulant therapy is bleeding, even when maintained within usual therapeutic ranges. The new anticoagulant agents are mainly focused on reducing the bleeding risk and managing the bleeding **(Mark A., and Theodore. 2008).**

The main goal for treating the patients with oral anticoagulants is to maintain the international normalized ratio. This allows the patient to evaluate the plasma clotting time with in the therapeutic range. According to the World Health Organization, the therapeutic international normalized ratio for aortic valve prosthesis is between 2.0 to 3.0 seconds and for mitral valve replacement are between 2.5 to 3.5 seconds. The main difficulty in treating patients with oral anticoagulant therapy is to maintain patient's international normalized ratio within these normal limits. According to the National and International data 40% to 50% of patients do not meet the target value, which leads to an increased risk of bleeding **(Rocha. 2010).**

Prosthetic valve obstruction may be caused by thrombus formation, pannus growth, or a combination of these. If the prosthesis is obstructed by pannus, thrombolytic therapy will be ineffective, so the valve needs to be replaced. Thrombolytic therapy for prosthetic valve obstruction is associated with significant risks and is often ineffective. The risk of thromboembolism is around 12 percentage and recurrent thrombosis occurs around 11percentage. Patients who develope a large clot should undergo for reoperation immediately. Streptokinase and urokinase are the

most frequently used thrombolytic agents. Thrombolytic therapy should be stopped by 24 hours if there is no hemodynamic improvement or atleast within 72 hours. If thrombolytic therapy is successful, it should be followed with intravenous heparin until warfarin achieves an international normalized ratio of 3 to 4 for aortic prosthetic valves and 3.5 to 4.5 for mitral prosthetic valves. If partially successful, thrombolytic therapy may be followed by a combination of subcutaneous heparin twice daily plus warfarin for a 3-month period **(ACC/AHA Practice Guidelines. 1998).**

Anticoagulation treatment can lead to adverse drug events; the risk is high due to the complexity of dosing. These medications ensure patient adherence and monitor effects. Anticoagulation education for prescribers independent study found that the educational program on the usage of anticoagulants will help to reduce vitamin K antagonist related adverse effects **(Pernod., et al 2008).**

If the patients are given adequate education concerning anticoagulation therapy, the treatment will clearly be more effective **(Doris., et al 2002).**

An observational study has been done in an emergency department and proved that patient education improved adherence to clinical guidelines of treatment with oral anticoagulants and prevention of its related bleeding episodes **(Temey., et al 2009).**

Education on the theoretical and pharmaceutical aspects of anticoagulation is a fundamental requirement for all patients on anticoagulant therapy. Training on point-of-care International normalized ratio testing is essential for self-management. The contents of the anticoagulation self-management association training course should include, basic information on blood coagulation, theoretical principles of individual anticoagulation or drug interactions with oral anticoagulants, practical information on coagulation monitoring with coagulometers, evaluation of measurements and, dose adjustment, signs of bleeding events and thromboembolic events, information on the frequency of international normalized ratio determination, keeping a patient diary, travel, nutrition, endocarditis prophylaxis, intramuscular injections, etc **(Jack., et al 2003).**

STATEMENT OF THE PROBLEM

"A Study to Assess the Effectiveness of Structured Teaching Programme on Anticoagulant Drug Compliance among Patients with Mechanical heart Valve in GKNM Hospital, Coimbatore"

OBJECTIVES

1) To assess the knowledge of patients with mechanical heart valve on anticoagulant drug compliance.
2) To compare the pre test and post test knowledge level regarding anticoagulant drug compliance among patients with mechanical heart valve.
3) To find the association between pre test knowledge score and selected demographic variables among patients with mechanical heart valves.

OPERATIONAL DEFINITIONS

Assess: In this study, assess refers to the statistical measurements of knowledge of patients on anticoagulant therapy.

Effectiveness: It refers to the significant gain in knowledge on anticoagulant drug compliance through structured teaching programme.

Structured teaching programme: It refers to the systematic information provided to the patients on anticoagulant drug compliance.

Anticoagulant: It refers to the medication that inhibits blood coagulation.

Drug compliance: It refers to the reliability of the patient in using a prescribed medication exactly as ordered by the physician, also watching for side effects and managing the side effects of anticoagulants.

Mechanical heart valve: It refers to an artificial heart valve or a device implanted in a patient with valvular heart disease.

HYPOTHESIS

H1-There will be a significant difference between the pre test and post test knowledge score on anticoagulant drug compliance among patients with mechanical heart valve.

H2-There will be an association between pre test knowledge score on anticoagulant drug compliance with demographic variables of patients with mechanical heart valve.

ASSUMPTIONS

- Patients with mechanical heart valve will have less knowledge about anticoagulant drug compliance.
- There will be significant knowledge gain related to anticoagulant drug compliance after education through structured teaching programme.

CONCEPTUAL FRAME WORK

A conceptual framework or model is described as a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation **(Reichel & Ramey, 1987).**

Conceptual framework helps to frame questions and find suitable literature. It is the tool the researcher uses to guide their enquiry. It will guide the researcher in his data collection. It enables the researcher to find the links between existing literature and his own research goals.

The conceptual framework of the present study developed by the investigator is based on the Context Input Process Product (CIPP) model of Daniel Stufflebeam (1983)

The CIPP model is a simple system model applied to programme evaluation. Present study aims to assess the effectiveness of structured teaching programme to improve the knowledge on anti coagulant drug compliance among patients with mechanical heart valve.

Context

Context evaluation includes examining and describing the context of the programme. The context includes conducting needs, determining the objectives of the programme and evaluation.

In the present study, context evaluation includes the importance of anticoagulant drug compliance among patients with mechanical heart valve at GKNM Hospital, Coimbatore.

Input

Input evaluation examines the programme plan of action for programme structuring decisions.

In the present study input includes existing knowledge on anticoagulant drug compliance.

Process

Process evaluation includes examining the implementation and monitoring the programme's performance. Process evaluation helps in implementation of decisions.

In the present study, process includes administration of structured teaching programme on anticoagulant drug compliance among patients with mechanical heart valve in cardio thoracic wards of GKNM Hospital.

Product

Product evaluation includes examining and determining the general and specific outcome of the programme.

In the present study the product evaluates the post test knowledge level on anticoagulant drug compliance.

FIGURE 1.1-Conceptual frame work of CIPP modified and developed from Daniel Stufflebeam (1983)

CHAPTER - II

REVIEW OF LITERATURE

Review of literature is a systematic search of published work to gain information about a research topic **(Polit. 2008).**

An extensive review of literature was done by the investigator to lay a broad foundation for the study.

The review of the present study is organized in the following headings

Section A: Literature related to incidence of mechanical heart valve replacement surgery

Section B: Literature related to importance of anticoagulant drug therapy among patients with mechanical heart valve

Section C: Literature related to side effects and management of anticoagulants among patients with mechanical heart valve

Section D: Literature related to nurses role and effectiveness of structured teaching programme on anticoagulant drug compliance among patients with mechanical heart valve

SECTION A: LITERATURE RELATED TO INCIDENCE OF MECHANICAL HEART VALVE REPLACEMENT SURGERY

Maggie., and Thomas. (2011) 15 million people in the United States suffer from valvular heart diseases. In 2009 nearly 90,000 patients had undergone valvular replacement surgery, patients between 60 to 65 years received mechanical valve due to its durability. Patients older than 60 to 65 years received biological valve, some characters that have been considered like patient co-morbidities, need for anticoagulants, patients anxiety, expectations for their life style and quality of life were incorporated in valve selection.

Frank., et al (2011) conducted a retrospective study on the outcome of 114 children who had undergone mechanical valve replacement in West Africa.

57.9%were female; of them 13 (11.4%) were non-Ghanaian West Africans who were on prolonged illness. Within one year of diagnosis less than 20% were able to afford for surgery.

Rao., et al (2011) conducted a review of literature to justify the exclusive use of either mechanical or tissue prostheses in the mitral position. A five year follow-up from the Toronto General Hospital was included and reviewed. Both studies concluded that there was no significant advantage for the use of either type of valve based upon freedom from thromboembolism, anticoagulant-related hemorrhage and valve-related mortality. The results suggested the preferential use of mechanical valves during mitral valve replacement was based on their durability and a consequent lesser need for reoperation.

Prendergast., and Tornos. (2010) stated that infective endocarditis is still a dangerous condition with unchanging incidence and the mortality rate of about 30% in 1 year. During acute infection 25% to 50% of cases required surgery as a life saving measure, nearly 20% to 40% of patients requires surgery during the convalescence stage. Valve replacement surgery has an established role in the management of infective endocarditis across wide range of patients.

Ozeren M., et al (2004) conducted a study to find the clinical results of ATS prosthetic valve, from September 1998 to July 2000. 199 patients were implanted with 240 ATS valve prostheses, of them 88 patient had mitral, 70 patient had aortic, and 41 patient had double valve replacements respectively. The outcome in 240 implants showed the ATS valves have a decreased incidence of complications, and is safe to provide excellent hemodynamic performance.

Ogendo. (2000) conducted a combined retrospective and prospective study from 1973 to 1977 in patients attending the cardiothoracic outpatient clinic of National Hospital at Kenyatta. Study found that the overall follow up rate was 476.3 patients per years and the incidence of morbidity rate was 2.73% patient per year.

SECTION B: LITERATURE RELATED TO IMPORTANCE OF ANTICOAGULANT DRUG THERAPY FOR MECHANICAL HEART VALVE PATIENTS.

Ronelle. (2013) had a debate on the duration of anticoagulants for patients receiving bioprosthetic aortic valves. Aspirin was recommended as the drug of choice for thromboembolic action by the American College of Chest Physicians. The American Heart Association recommended a 3-month course of treatment with warfarin plus aspirin. An epidemiologic findings by Denmark and Merie states that patients with bioprosthetic implants have to remain on anticoagulants for 6 months after heart valve replacement surgery. Their findings provide evidence that the early discontinuation of anticoagulants after mechanical valve implantation was associated with increased cardiovascular death.

Massel., & Little. (2013) conducted a study to assess the efficacy and safety of combined antiplatelet and oral anticoagulant therapy versus oral anticoagulation monotherapy in patients with prosthetic heart valves. Study found that adding antiplatelet therapy, either low-dose aspirin or dipyridamole, to oral anticoagulants decreased the risk for systemic embolism or death. In antiplatelet therapy risk for bleeding is increased but low-dose aspirin appears to be similar to higher-dose aspirin and dipyridamole was found to be safe and effective in patients with prosthetic heart valves.

Gerard, P, Aurigemma. (2013) discussed about the antithrombotic therapy among prosthetic heart valve patients. The major complications in patients with prosthetic heart valves include hemolysis, paravalvular leak and endocarditis. The main issue while managing the patients with mechanical heart valve is antithrombotic therapy. It is prescribed mainly to prevent thromboembolism and valve thrombosis.

Dr.Avinashdal. (2012) stated that, oral anticoagulants are the drugs that are used in patients to prevent blood clotting (blood thinners). These medicines are useful in patients who had undergone valve replacements and in some cases with coronary and vascular diseases. A mechanical heart valve replacement patient has to use these medicines life-long.

Wikipedia. (2011) two types of valves can be used for valve replacement; they are mechanical and tissue valves. Nowadays mechanical valves last lifelong. All mechanical heart valves require lifelong anticoagulant treatment. Anticoagulation is the process of thinning the blood.

USC Cardiothoracic Surgery. (2010) stated that mechanical valves are created from man-made materials. Lifelong anticoagulation therapy is needed while using these type of valves. Anticoagulant medication prevents the blood clots from forming in or around the valve.

Marieke., et al (2009) done a prospective study on 4202 patients with mechanical heart valves, to find the optimal level of oral anticoagulant therapy for the prevention of arterial thrombosis, atrial fibrillation, or myocardial infarction. Study found that international normalized ratio of 3.5 after myocardial infarction and 3.0 for patients with mechanical heart valve had atrial fibrillation as a starting point in clinical trials.

Goldhaber, Samuel Z. (2006) done a study to minimize the delay in achieving therapeutic anticoagulation and revealed that mechanical heart valve patients require anticoagulant therapy to prevent valve-associated thromboembolic stroke and thrombosis. Oral vitamin K antagonists such as warfarin do not act immediately. They require at least 5 days to achieve a therapeutic effect.

Henry, Bussey. (2004) presented a paper in the conference of Duke University Clinical Research Institute, to discuss the options for mechanical heart valve patients for improving antithrombotic outcomes. Author explained that using warfarin is effective and safe therapy. Although single antiplatelet therapy is considered as an inadequate therapy comparing to combine antiplatelet therapy which offer platelet-inhibiting mechanisms in mechanical heart valve patients.

Little., et al (2003) a comparative study was done to assess the safety and effectiveness of antiplatelet therapy with oral anticoagulation among patients with prosthetic heart valves. The reference lists of individual reports, consensus statements, review articles and meta-analyses. Finding suggested that adding antiplatelet therapy, either low-dose aspirin or dipyridamole, to oral anticoagulation will decrease the risk of systemic embolism or death among patients with prosthetic heart valves.

Eric., et al (2001) conducted a prospective follow-up after Medtronic hall valve replacement; to assess the effect of anticoagulation control on long-term survival. The multivariate analysis found that high anticoagulation variability is the most important independent predictor of reduced survival after valve replacement with a mechanical valve. Better anticoagulation control had improved the survival.

Christa., et al (2000) stated that the indications for oral anticoagulation treatment has extended over the past 10 years. Studies on non-valvular atrial fibrillation, and valvular heart surgery leads to an increased number of patients treated. 64 000 valve operations were performed across Europe in 1997; in two thirds surgeries mechanical prostheses were used, which needs lifelong oral anticoagulant treatment.

SECTION C: LITERATURE RELATED TO SIDE EFFECTS AND MANAGEMENT OF ANTICOAGULANTS AMONG PATIENTS WITH MECHANICAL HEART VALVE .

Teresa, Marino,. (2013) states that warfarin is more effect than unfractionated heparin for pregnant women with mechanical valves as a thromboembolic prophylaxis. During the first trimester of pregnancy warfarin therapy may cause a substantial increase in fetal anomalies. Anticoagulation with any agent had an increased incidence of prematurity, fetal wastage, and low birth weight.

Anna., and Robert. (2013) conducted a prospective study. Patients after aortic or mitral mechanical valve replacement were selected, to evaluate the pharmacokinetics and safety of oral dabigatran and etexilate. Patients were selected and assigned to receive warfarin or dabigatran in 2:1 ratio with dabigatran renal dose at 150 to 300 mg twice daily in order to achieve plasma trough of at least 50mg per millilitre, to prevent valve thrombosis. Warfarin was dosed to achieve international normalized ratio 2.0-3.0 or 2.5-3.5, depending on patients' thromboembolic risk .Study revealed that comparing to warfarin, dabigatran had an increased risk of thromboembolic events and bleeding in patients with mechanical heart valves.

Haibo., et al (2012) conducted a correlative study among 1,658 Chinese patients after valve replacement surgery with an aim to find the correlation between intensity of anticoagulant therapy and thromboembolism or hemorrhagic

complications, follow up of 1,508 patients after 1-61 months were done and found that the incidence rate of anticoagulation-related hemorrhage was 2.02% patient per years. The incidence rate of anticoagulation-related thromboembolism was only 1.17 out of 100 patient per years. The incidence rate of total complications was about 3.24% patient per years. Study revealed that low anticoagulant strategy can efficiently prevent hemorrhage and thrombosis complications.

Mathew., and Kumar (2010) reported that patients on warfarin who experience severe bleeding are reversed by stopping the warfarin therapy, administering fresh frozen plasma or prothrombin complex concentrates and administering vitamin K prevented further bleeding. Vitamin K is often slow to bring the international normalized ratio within normal range, because the time needed for hepatic synthesis of vitamin K was dependend on the coagulation factors. The delay in optimal reversal, combined therapy by using vitamin K with fresh frozen plasma or prothrombin complex concentrates is recommended.

Erica., et al (2009) conducted a systemic review on mechanical heart valve patients taking oral anticoagulation therapy having intracranial haemorrhage. The study found that restarting oral anticoagulant therapy few days after the occurrence of cerebral haemorrhage or stopping anticoagulant therapy indirectly for few days are both safe.

Crowther., and warkentin. (2008) presented a plan of management for anticoagulation induced bleeding. Heparin and coumarin are inexpensive, effective, widely available and have specific antidotes but problematic because they need careful monitoring. Warfarin had delayed onset of action and had a narrow therapeutic window also interacts with many medications, in certain settings it is paradoxically prothrombotic. Heparin requires monitoring for its therapeutic effect and can also cause thrombosis.

D.Puri., et al (2008) done a comparative analysis of various anticoagulation protocols utilized in an institution, to find the early anticoagulation effect from the first post operative day. Three groups of patients were selected according to the type of anticoagulant. The patients who received oral anticoagulation from the first postoperative day were grouped as A; Patients who received oral anticoagulation

along with low-molecular weight heparin were grouped as Group B; and the patients who received unfractionated heparin along with anticoagulants within 12 hours after surgery as group C. The study concluded that treatment with early oral anticoagulation therapy provides optimum anticoagulation effect with minimum complications.

According to **Christian Seiler. (2004)** by administering vitamin K and by withholding warfarin excessive anticoagulation can be managed. Bleeding can be managed by transfusing fresh frozen plasma. The major causes for morbidity and mortality are haemorrhagic and thrombotic complications. Thrombosis occurs in 1–3% cases annually and thromboembolic events in 0.7% of cases. The annual risk of bleeding is 2.7%. Mortality was higher in patients with bleeding complications. These complications may vary with increasing age of patient with the valve prosthesis. The incidence of thromboembolic events with tilting disk, bileaflet and ball cage prostheses is estimated to be 2.5%, 0.7%, and 0.5% per year, respectively.

According to the **American Society for Gastrointestinal Endoscopy. (2002)** the most common site of significant bleeding in patients receiving oral anticoagulation therapy is the gastrointestinal tract. A history of prior gastrointestinal bleeding, but not a history of peptic ulcer disease is associated with an increased risk of major gastrointestinal hemorrhage during warfarin therapy (30% at 3 years versus 5% in those with no prior bleeding history).The risk of gastrointestinal bleeding is increased when the international normalized ratio is above the therapeutic range.

Levine., et al (2001) conducted a review to find the incidence of hemorrhage in patients who were receiving oral anticoagulants and heparin. Relevant articles were taken from symposia of the American college of chest physicians. The study revealed that the annual rate of spinal bleeding and intracranial bleeding was 0.57%.The major extra cranial bleeding was 2.1% per year.

G Montalescot., et al (2000) conducted a comparative non randomized study in 208 patients to find the effect of low molecular weight heparin and unfractionated heparin after mechanical heart valve replacement. One group was treated with unfractionated heparin and found that 27% of patient had activated partial thromboplastin time above 1.5 times of control, but 62% were over anticoagulated

two major bleedings occurred and one stroke occurred. Other group is treated with low molecular weight heparin and found that it provided adequate anticoagulation and appears feasible.

Cannegieter., et al (1995) done a study to determine the optimal intensity of oral anticoagulant therapy for patients with mechanical heart valves. Optimal intensity was determined at different levels of anticoagulation, by calculating the incidence of complications, 1608 patients were followed for 6475 patient-years. 43 patients' had cerebral embolism, peripheral embolism in 2patients, intracranial and spinal bleeding had occurred in 36 patients and major extra cranial bleeding in 128patients. The incidence of both complications was low, while achieving the international normalized ratio between 2.5 and 4.9, to achieve the level of anticoagulation, a target international normalized ratio of 3.0 to 4.0 is recommended.

SECTION D: LITERATURE RELATED TO NURSES ROLE AND EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMMAE ON ANTICOAGULANT DRUG COMPLIANCE AMONG PATIENTS WITH MECHANICAL VALVE.

New Orleans. (2013) conducted a study to assess 1738 patients' knowledge of anticoagulation and its association with clinical characteristics. Study found that younger and more educated patients were more likely to pass the oral anticoagulation knowledge and further research is needed to assess the relationship between anticoagulation knowledge, international normalized ratio control and adverse clinical outcomes.

Verret, L., et al (2013) had done a randomized study in 114 patients of age 18-75yrs, who had received warfarin for at least six months at a specialized anticoagulation clinic. The quality of life and anticoagulation control was compared with a physician-led specialized anticoagulation clinic and pharmacist-led warfarin patient self-management program in a Tertiary academic medical care center. 58 patients attended an educational session on anticoagulation given by a pharmacist and another 56 patients in controlled group had undergone management at the anticoagulation clinic. Knowledge was assessed using questionnaire at the beginning and end of the study. By calculating the time spent in therapeutic range quality of

anticoagulation control was evaluated. The study found that there is an improvement in the quality of life of patients who received self management warfarin program led by pharmacists.

Mair., et al (2012) conducted a retrospective follow-up from 1993 to 1998 on patients who received mechanical heart valve prostheses on long-term self-management of anticoagulation therapy. Outside trial conditions was hypothesized and found that self-management of oral anticoagulant improves long-term outcome and treatment quality.

Syed, R., et al (2011) conducted a cross-sectional study in156 patients attending physician- and pharmacist-managed anticoagulation clinics, from 2008 to 2010.To assess the factors affecting warfarin-related knowledge and international normalized ratio control .No significant differences were found between medication therapy adherence clinic and non- medication therapy adherence clinic. Medication therapy adherence clinic patients were found to have better international normalized ratio control compared to non- medication therapy adherence clinic patients. The study concluded that a combined cooperation between physicians, nurses and pharmacists, should exist to achieve desired therapeutic outcomes.

Moore, Dana. (2011) states that patients on anticoagulant therapy must be educated about the drug-specific information, risk for bleeding, how to monitor bleeding, and management for bleeding if it occured.

Heisler., et al (2011) conducted a study on oral anticoagulation knowledge and international normalized ratio goal attainment of patients attaining in an anticoagulation clinic in a Veterans Affairs Medical Center.10 previous international normalized ratio control values with in goal range were collected and compared. The study showed that out of 29 questions, 74.1% of patients on long-term warfarin therapy got 21 correct answers. The anticoagulation knowledge assessment instrument shows that, there was no significant relationship between international normalized ratio control and patient warfarin knowledge.

Gilles., et al (2008) conducted a prospective multi center open randomized study to evaluate the effect of patient education about oral anticoagulation therapy in reducing recurrent thrombotic and hemorrhagic complications. In the intervention,

one group had a specific oral anticoagulation treatment educational program and was compared with a control group. Study shows that patient education using an educational program had reduced vitamin k agonist-related adverse event rates.

Zeolla, MM., et al (2006) conducted a study to develop and validate an instrument for assessing patients knowledge regarding oral anticoagulation therapy. The oral anticoagulation knowledge test was conducted to the subjects who were on warfarin and who were not on warfarin. After 2-3 months of initial assessment a subgroup of warfarin subjects were retested to assess test- retest reliability. Patients taking warfarin were scored higher than the patients who are not on warfarin. Thus the findings demonstrated that the oral anticoagulation knowledge test is a valid, brief, and reliable knowledge assessment instrument that can be a useful tool for research and clinical practice to augment patient education programs.

Fang., et al (2006) conducted a survey on 179 patients taking warfarin in an anticoagulation clinic. Patients were interviewed and administered the test of functional health literacy to find the association between health literacy, warfarin knowledge, warfarin control and adherence. The study showed that about 57.0% of patients had high self-reported adherence to therapy, they reported that for more than 3 months they had not missed a dose. Study proved that limited health literacy was not significantly associated with self-reported adherence to adjusted or unadjusted analyses.

Nadar., et al (2003) conduct a cross-sectional questionnaire survey was done in three Birmingham teaching hospitals among 180 patients who were attending anticoagulation clinics. The study revealed that knowledge and perceptions of antithrombotic therapy differ between ethnic groups in the United Kingdom. Study showed that there is no significant difference between the groups.

Elaine., et al (2003) conducted a study to evaluate patient's warfarin knowledge and its relationship to control anticoagulation. Patient's knowledge were tested by using 9 questions. Score was calculated for each patient. Sixty patients had better knowledge because they had read the information booklet on warfarin than those who had not. There was a positive correlation between patient's warfarin

knowledge and the number of international normalized ratio values and also found that patient's warfarin knowledge was poor.

Sawicki, T. (1999) conducted a self-management program for patients receiving oral anticoagulation to investigate the control measures of treatment-related quality of life. Patients were grouped based on the treatment, teaching program and international normalized ratio self-monitoring. It was found that an anticoagulation education program with self-management of anticoagulation therapy results in improved accuracy of anticoagulation control and treatment-related quality-of-life measures.

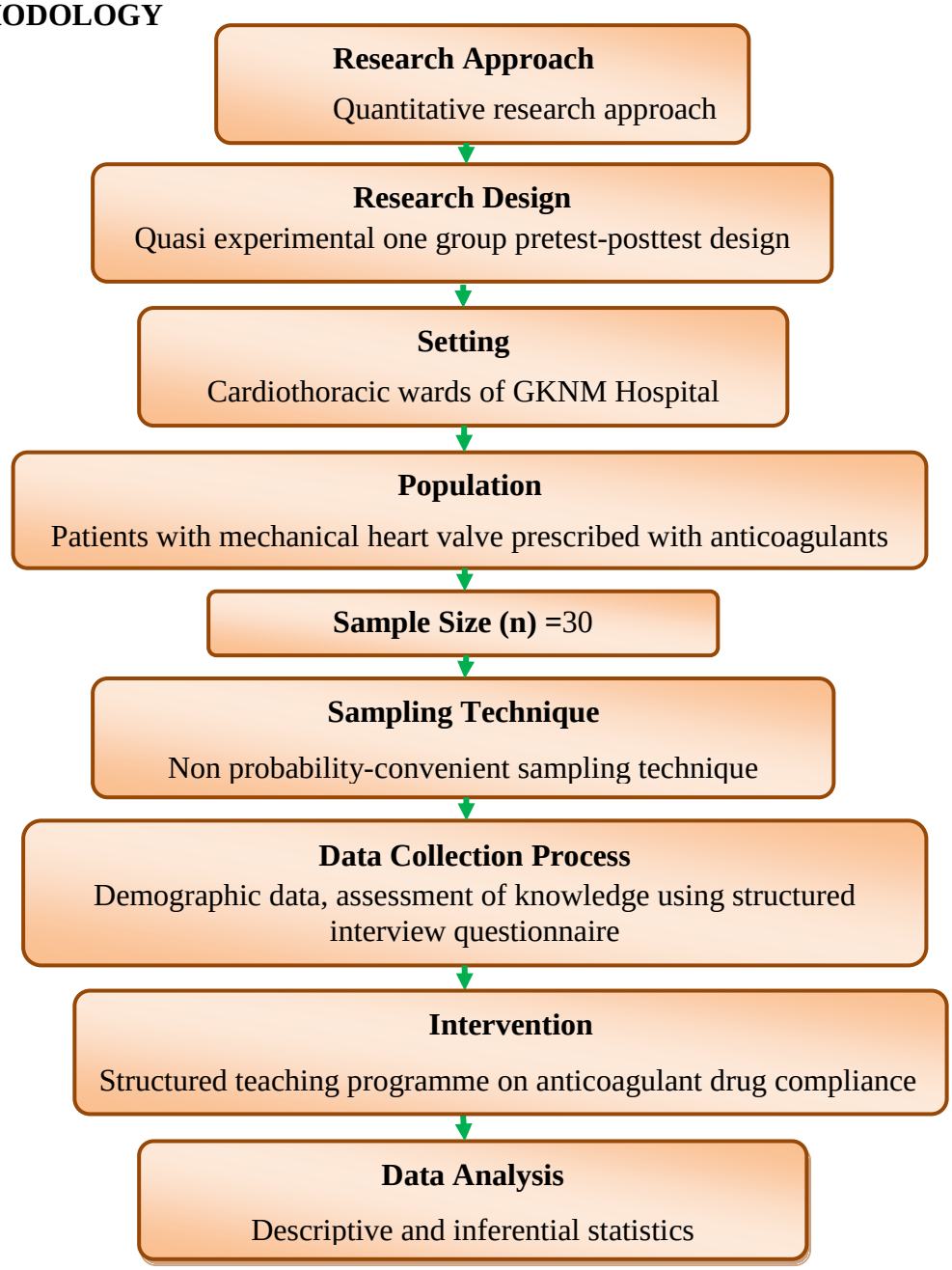
Stone, S., et al (1989) done a study to assess the effectiveness of video tape patient education and personalized patient education for anticoagulant therapy. Both groups had significantly higher knowledge score after instruction, but videotape instruction required substantially less nursing time. The study found that videotape teaching is an effective, alternative and well-accepted form of patient education which requires less personnel time.

CHAPTER - III

METHODOLOGY

Research methodology is a way to solve the research problem systematically. It deals with defining the problem, formulation of hypothesis, methods adopted for data collection and statistical techniques used for analysing the data with logical reason behind it.

FIGURE3:1 - SCHEMATIC REPRESENTATION OF THE RESEARCH METHODOLOGY



RESEARCH APPROACH

The Research approach selected was the Quantitative research approach. This approach was used to assess the effectiveness of structured teaching programme on anticoagulant drug compliance among patients with mechanical heart valve.

RESEARCH DESIGN

The research design provides an overall plan for conducting the study. Quasi experimental one group pre test post test design was selected for this study.

Demographic data and knowledge on anticoagulant drug compliance were assessed during the pre test. The pre test scores were used as a base to compare the post test scores. The post test score represented the effectiveness of structured teaching programme on anticoagulant drug compliance.

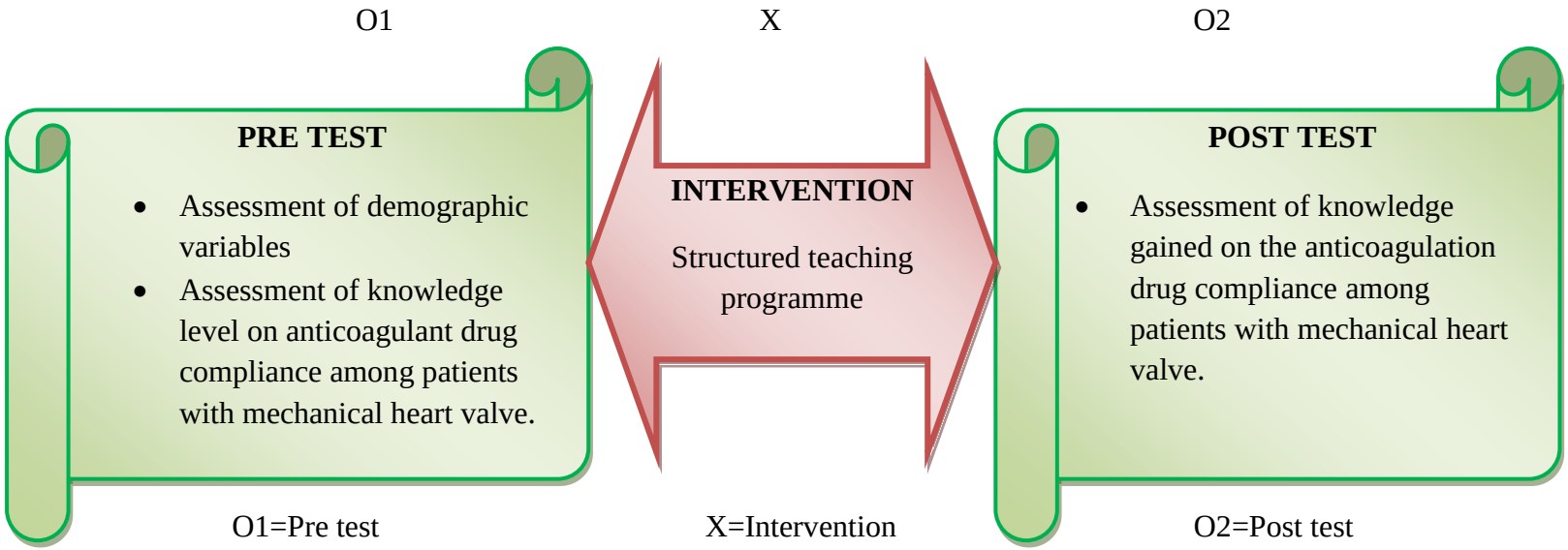


FIGURE 3.2 - SCHEMATIC REPRESENTATION OF RESEARCH DESIGN

VARIABLES

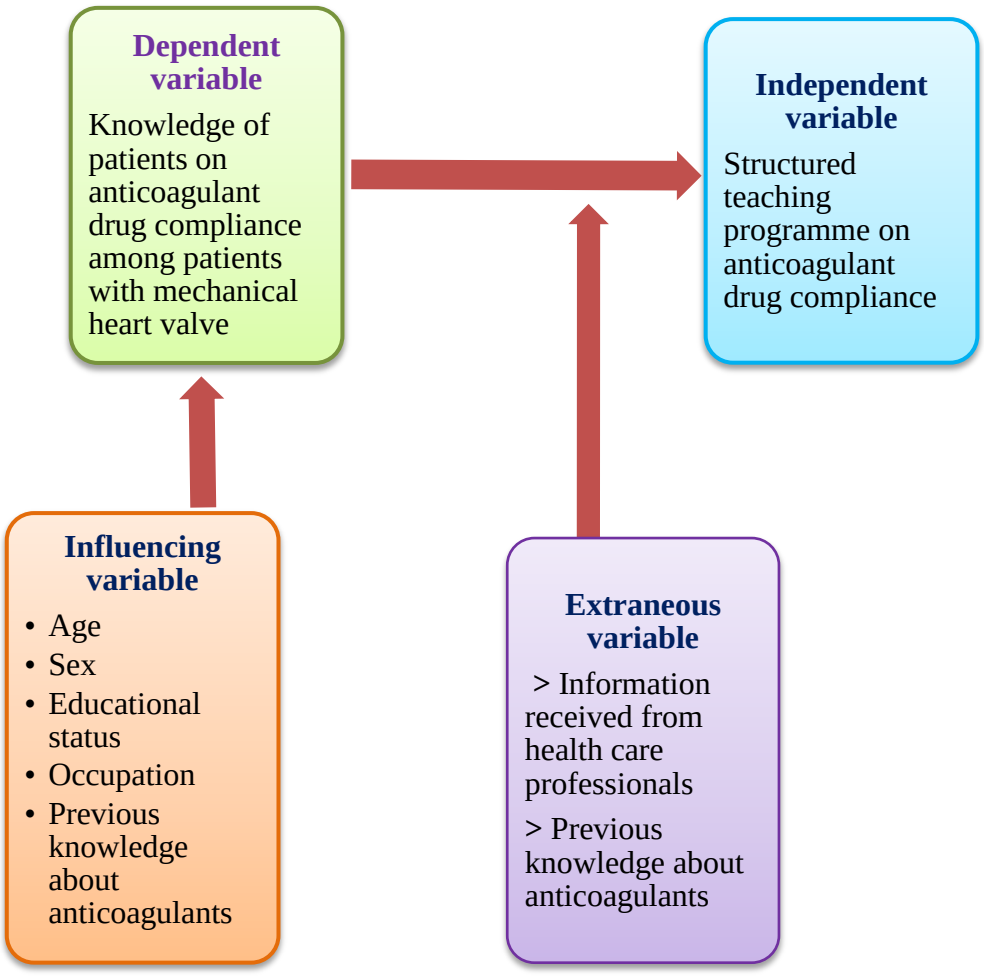
Influencing variable : Age, sex, educational status, occupation, and Previous knowledge about anticoagulants

Dependent variable : Knowledge of patients with mechanical heart valve, on anticoagulant drug compliance.

Independent variable : Structured teaching programme on anticoagulant drug compliance.

Extraneous variable : Previous knowledge about anticoagulants and information received from health care professionals.

FIGURE 3.3 - SCHEMATIC REPRESENTATION OF VARIABLES



SETTING OF THE STUDY

The study was conducted in the cardiothoracic wards of G. Kuppuswamy Naidu Memorial Hospital, Coimbatore which is a super speciality tertiary care centre.

POPULATION

The population comprised of patients with prosthetic heart valve on anticoagulant drug therapy during the study period.

SAMPLE SIZE

The sample size was determined, using **Mahajans** formula

Sample size (n) = $\frac{4Pq}{L^2}$

P = Percentage of population — P = (27/234)*100 = 12 %

q = 100 – P — q = 100 – 12 = 88

L = Allowable error — L = 12

Sample size (n) = $\frac{4Pq}{L^2}$ = (4*12*88)/144 = 30

According to this formula, it was decided to select 30 samples for the study

SAMPLING TECHINIQUE

Non probability convenient sampling technique was adopted for the study.

SAMPLING CRITERIA

Inclusion criteria

- Patients with prosthetic heart valve on anticoagulant therapy.
- Patients who were willing to participate in the study.
- Patients who can understand and communicate in Tamil or English

Exclusion criteria

- Patient who are hemodynamically unstable
- Patient who develop complications after prosthetic valve replacement surgery.

DESCRIPTION OF THE TOOL

The data collection tool consisted of two sections.

Section A: Demographic data

It comprised of demographic variables of the subjects which includes age, sex, education, religion, type of family, occupation, family income, marital status, previous history of surgery and awareness of anticoagulant drug prescribed.

Section B: Structured interview questionnaire

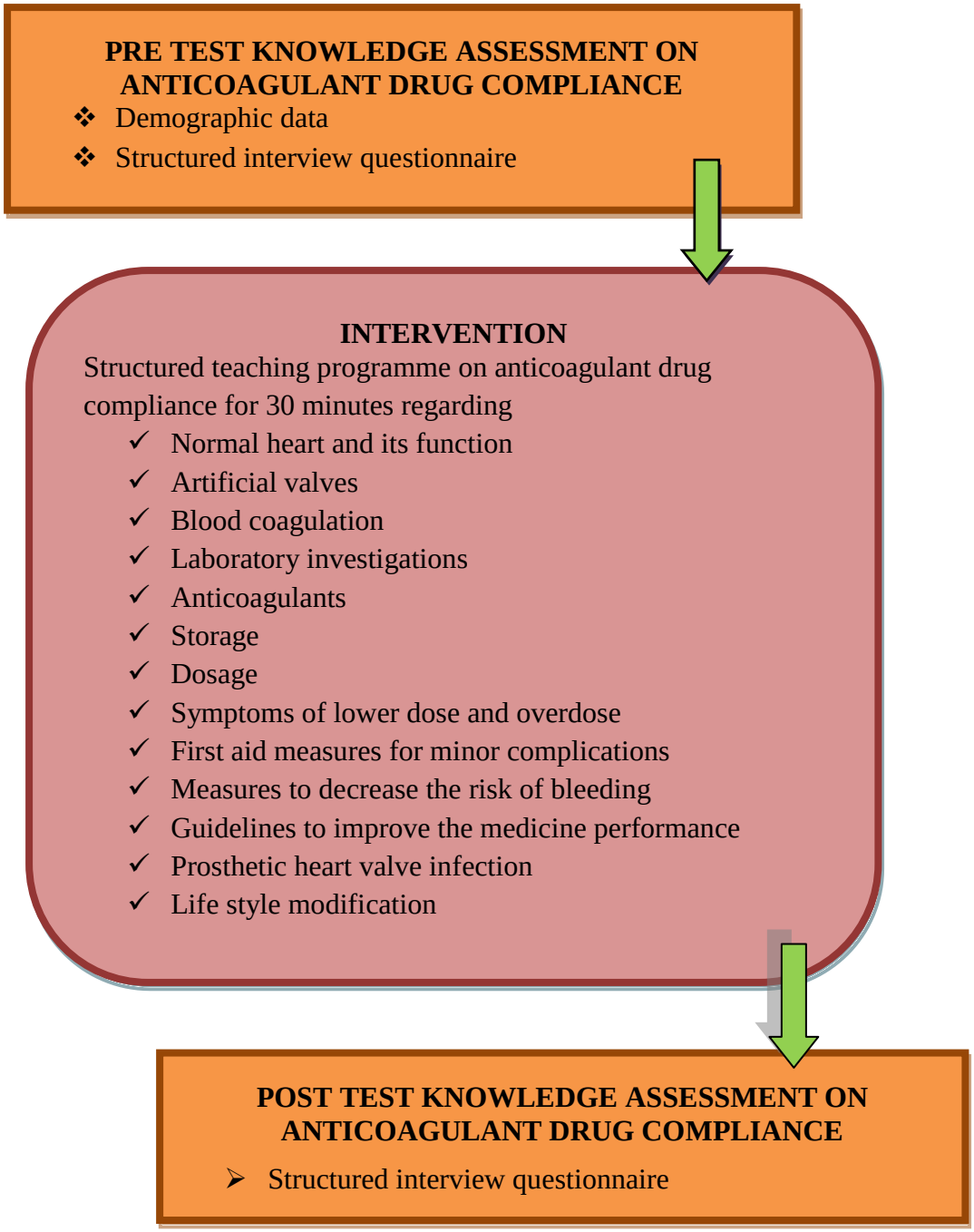
It comprised of 20 questions under eight separate sub headings to assess the knowledge regarding anticoagulant drug therapy for patients with mechanical heart valve. The data was collected by interview method; the collected data was categorized according to the selected aspect.

The scoring pattern is as follows. Each "correct" answer was given a score of one and a score of zero was given for the "wrong" answer. The maximum score was 20.The level of knowledge was categorized based on the scoring as follows; as 0-10 Inadequate Knowledge, 11-15 Moderate Knowledge and 16-20 score as adequate knowledge.

DESCRIPTION OF THE INTERVENTION

After shifting the patients from cardio thoracic intensive care unit to cardio thoracic wards, on the 4^{th} post operative day following valve replacement surgery, the patients were interviewed using the structured interview questionnaire and demographic data, to assess their knowledge on anticoagulant drug compliance. After the pre test, structured teaching programme on anticoagulant drug compliance was given. The post-test was performed on the day of discharge (8^{th} day of surgery) to assess the level of knowledge on anticoagulant drug compliance.

FIGURE: 3.4 - SCHEMATIC REPRESENTATION OF INTERVENTION



VALIDITY

The tool was submitted for content validity to experts in the field of cardio thoracic surgery and medical surgical nursing in and around Coimbatore. The translated Tamil version of the tool was validated by Tamil experts. Based on their suggestions and recommendations, the tool was finalized.

RELIABILITY

Reliability of the research instrument is defined as the extent to which the instrument yields the same results on repeated measures. It is concerned with consistency, accuracy, precision, stability, equivalence and homogeneity **(Kothari CR., 1996).**

The reliability of the tool was determined using the Spearman Brown's Split-Half technique which showed r = 0.949 for structured knowledge questionnaire. Hence the tool was found highly reliable.

Reliability was computed using the following equation,

$$r = \frac{\Sigma (X- \bar{X}) (Y- \bar{Y})}{\sqrt{\Sigma(X- \bar{X})^2 \times \Sigma(Y- \bar{Y})^2}}$$

ETHICAL CONSENT

The ethical consent was obtained from the research committee of GKNM Hospital, Coimbatore. Informed consent was obtained from the study participants. Confidentiality was maintained throughout the study.

PILOT STUDY

Pilot study was conducted in the cardiothoracic wards of G. Kuppuswamy Naidu Memorial Hospital, Coimbatore, for a period of two weeks (15.07.2013 - 26.07.13) from 8am to 5pm.Six patients were selected by convenient sampling technique. After obtaining the informed consent the demographic datas were collected and structured interview questionnaire were used to collect data. Structured teaching programme on anticoagulant drug compliance was administered to the study participants, the results showed that the structured teaching programme was effective in increasing the knowledge level of patients on anticoagulant drug compliance. Upon completion of the pilot study, the feasibility & practicability of the study was assessed. Based on the pilot study results necessary changes were made in the tool.

DATA COLLECTION PROCEDURE

The data collection period was for four weeks. Data was collected every day from 29.07.13 - 24.08.13.The samples selected were given a self introduction and then an oral consent was obtained from them. The participants were assured about confidentiality of the data to be collected and were told that it will be used only for research purpose. The pre test knowledge questionnaire and demographic datas were administered on the 4^{th} day of surgery, followed by the structured teaching programme. It was followed by an interactive session with the patient and family members so as to clarify their queries and furnish them with adequate explanations. Post test level of knowledge was assessed on the 8^{th} post operative day or on the day of discharge.

PLAN FOR DATA ANALYSIS

The data collected from subjects were compiled and analyzed using descriptive and inferential statistics.

1. Descriptive statistics: Frequency, standard deviation, mean and mean percentage were used to describe patients demographic variables.

2. Inferential statistics: Paired‘t’ test was used to compare the pre test and post test knowledge scores. Chi-square test was used to find out the association between selected demographic variable and knowledge scores.

CHAPTER - IV

ANALYSIS AND INTERPRETATION

Analysis is defined as the process of systematically applying statistical and logical techniques to describe, summarize and compare the data **(Suresh K, Sharma. 2011).**

This chapter deals with the analysis and interpretation of data collected from 30 samples after mechanical valve replacement surgery, and on anticoagulant drug therapy, to assess the effectiveness of structured teaching programme on anticoagulant drug compliance among patients with mechanical heart valve. The findings are based on descriptive and inferential statistical analysis and it is tabulated and described as follows:

Table 4.1: Distribution of patients based on demographic variables

Table 4.2: Distribution of pre test level of knowledge on anticoagulant drug compliance among patients with mechanical heart valve

Table 4.3: Distribution of post test level of knowledge on anticoagulant drug compliance among patients with mechanical heart valve

Table 4.4: Distribution of pre test and post test knowledge scores on anticoagulant drug compliance among patients with mechanical heart valve

Table 4.5: Association between pre test knowledge score and selected demographic variables

TABLE 4.1 DISTRIBUTION OF PATIENTS BASED ON DEMOGRAPHIC VARIABLES.

n=30

SI No	Demographic variables		Frequency (f)	Percentage (%)
1	Age	Below 30 yrs	5	16.67
		31-40	11	36.67
		41 -50	9	30
		51-60	5	16.67
2	Sex	Male	10	33
		Female	20	67
3	Education	Illiterate	8	26.67
		Primary	4	13.33
		Secondary	11	36.67
		Higher secondary	3	10
		Under graduate	2	6.67
		Post graduate	2	6.67
4	Religion	Hindu	28	93
		Muslim	2	7
5	Type of family	Nuclear family	22	73
		Joint family	8	27
6	Occupation	Unemployment	16	53.33
		Agriculture	4	13.33
		Government	1	3.33
		Private	7	23.33
		Others	2	6.67
7	Family income	Less than 10,000	25	83
		10,001-20,000	5	17
8	Marital status	Married	26	87
		Unmarried	4	13
9	Previous history of any surgery	Yes	19	63
		No	11	37

10	Awareness of the anticoagulant drug prescribed	Yes No	3 27	10 90

Table (4.1) reveals the distribution of demographic variables.

Age: Out of 30 patients 5(16.67%) were below the age of 30yrs and 51-60yrs of age group. 11(36.67%) of them were between the age group of 31-40yrs. 9(30%) of them were between the age group of 41-50yrs.

Sex: Majority of patients were females20 (i.e)(67%) and 10 (i.e) (33%) were males

Education: Considering the patients educational level, 8(26.67%) were illiterate. 4(13.33%) had primary level education.11 (37%) had secondary school level education, and 3(10%) had higher secondary level education. 2(6.67%) had under graduate and post graduate education.

Religion: With respect to religion, majority of them were Hindus i.e., 28(93%) and 2(7%) were Muslims.

Family: Majority of patients (i.e)22(73%) belong to nuclear family and 8(27%) belong to joint family.

Occupation: 16(53%) of patients were unemployed. 4(13.33%) belong to agriculture group.1 (3.33%) were government employees and 23(33%) were private employees. 2(6.67%) belongs to other group

Income: Among 30 patients 25(83%) had an income of less than Rs.10, 000 per month and 5(17%) had Rs10, 001-20,000 income per month.

Marital status: Majority 26(87%) of them were married and 4(13%) were unmarried.

Previous history of surgery: 19(63%) had previous history of surgery, and 1(37%) had history of surgery.

Awareness of the anticoagulant drug prescribed: Only 3(10%) were aware of the anticoagulant drug prescribed and 27(90%) of the patients were not aware of the anticoagulant drug prescribed.

FIGURE: 4.1 DISTRIBUTION OF ACCORDING TO AGE

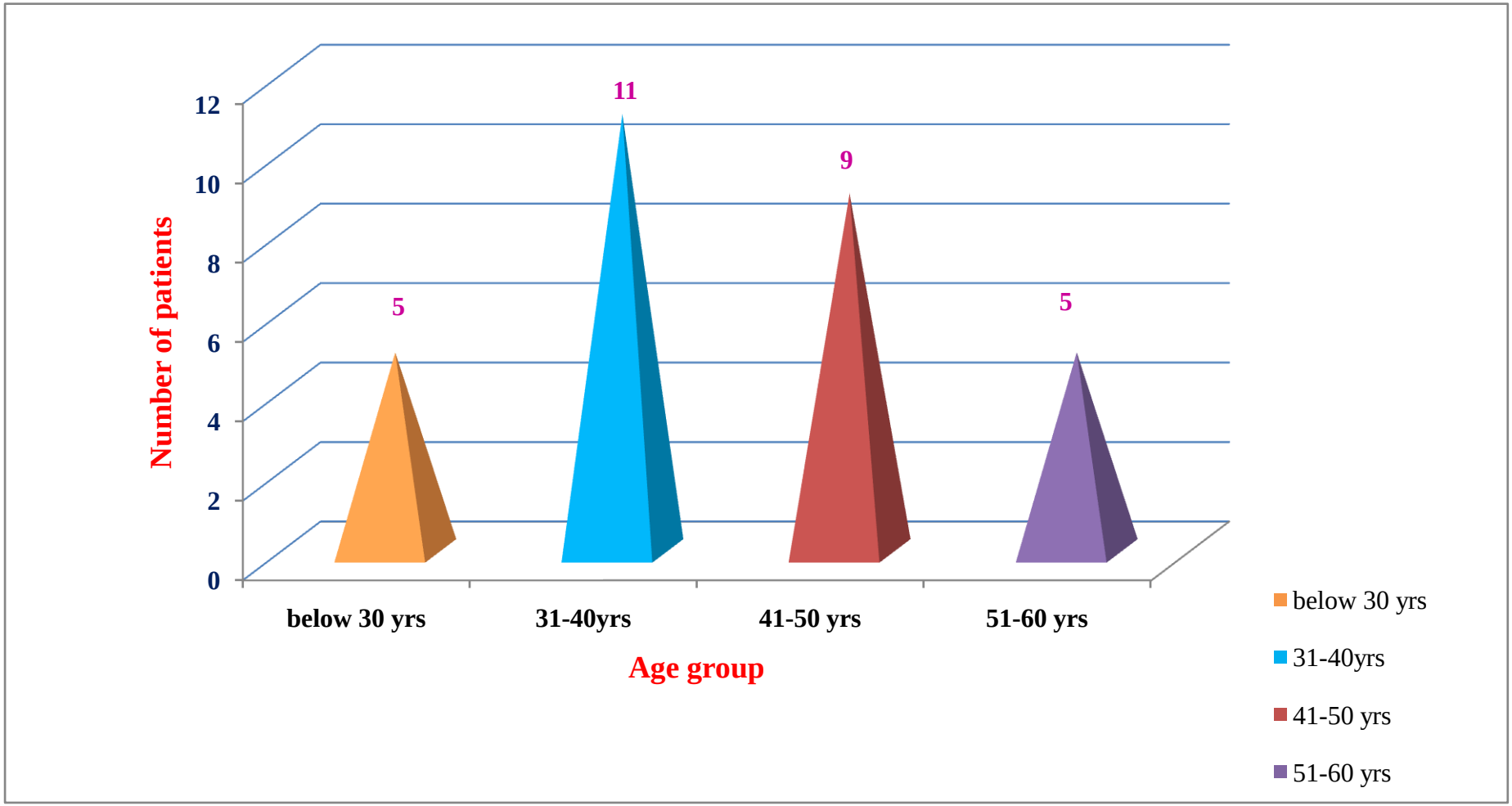


FIGURE: 4.2 DISTRIBUTION OF PATIENTS BASED ON THE EDUCATIONAL STATUS

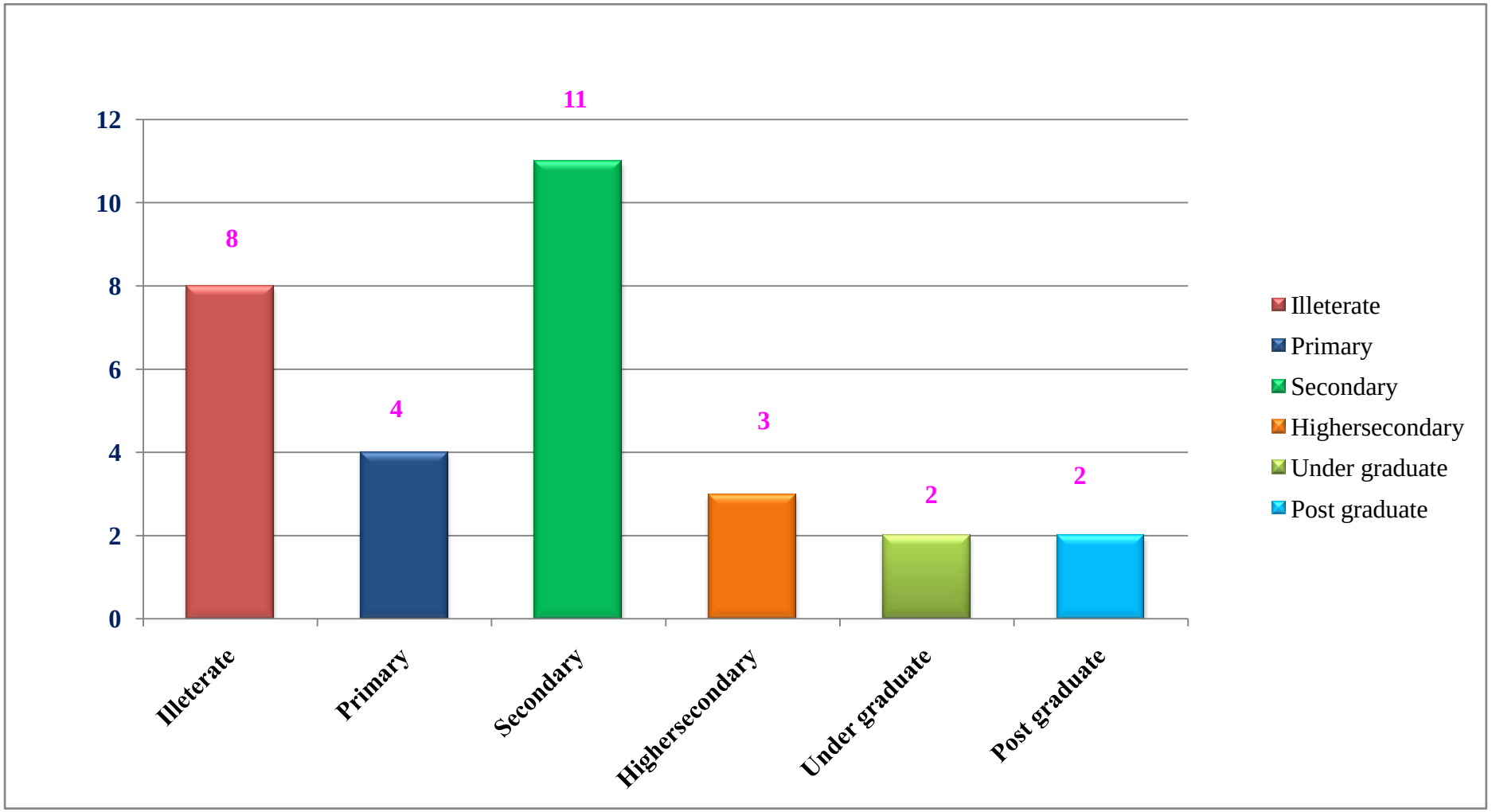


FIGURE: 4.3 DISTRIBUTION OF PATIENTS BASED ON THEIR OCCUPATION

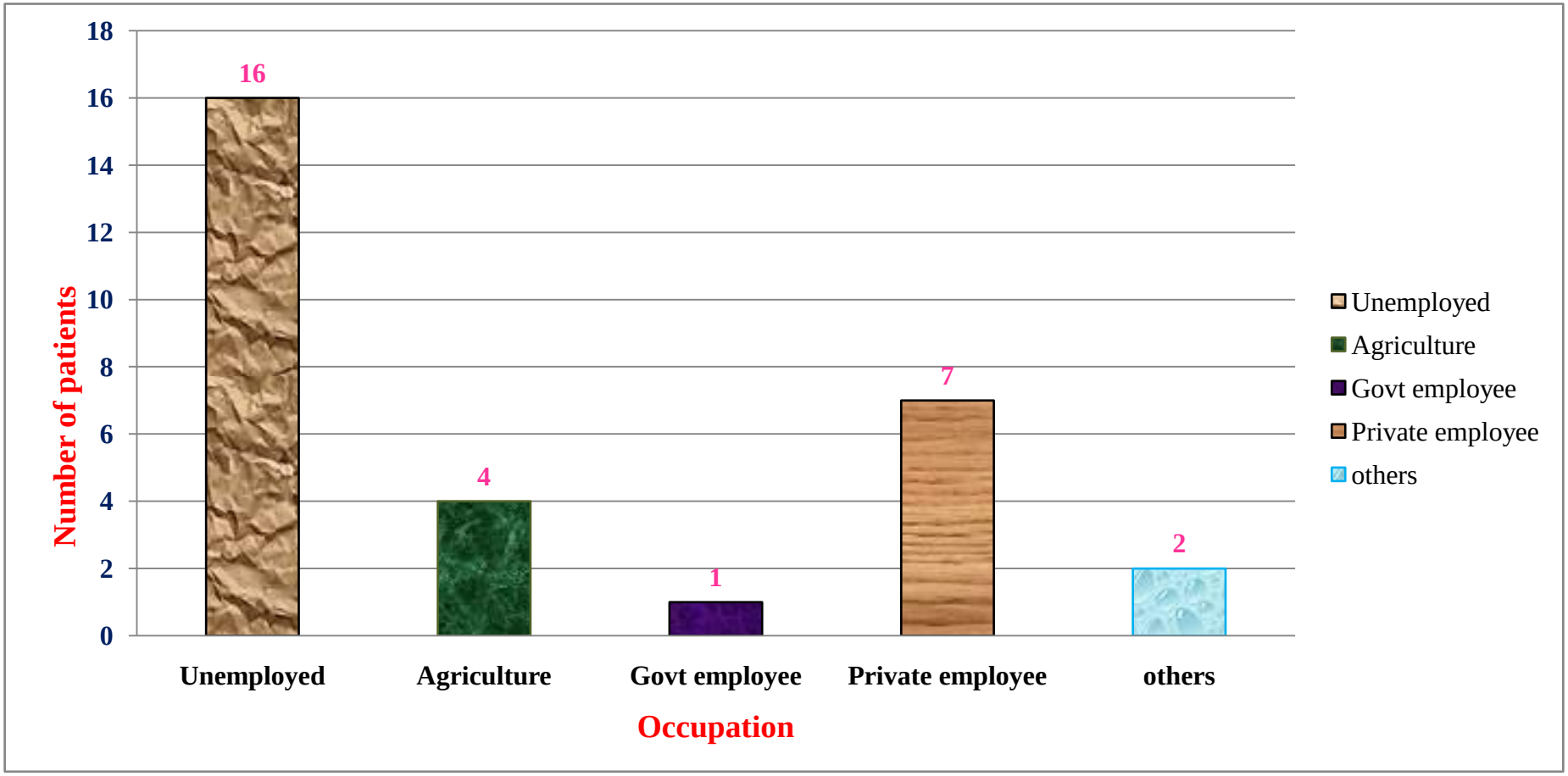


FIGURE : 4.4 DISTRIBUTION OF PATIENTS ACCORDING TO THEIR PREVIOUS EXPERIENCE OF SURGERY

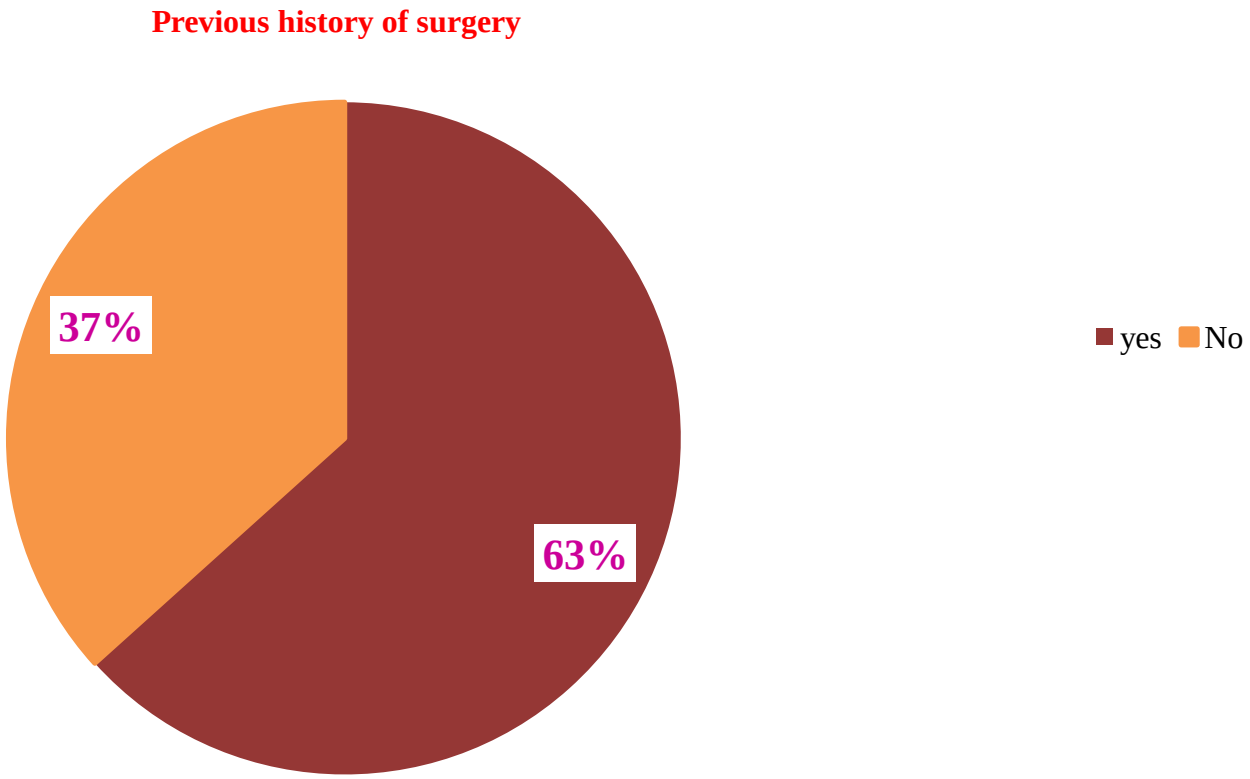


FIGURE: 4.5 DISTRIBUTION OF PATIENTS ACCORDING TO THEIR AWARENESS ON ANTICOAGULANT DRUG THERAPY

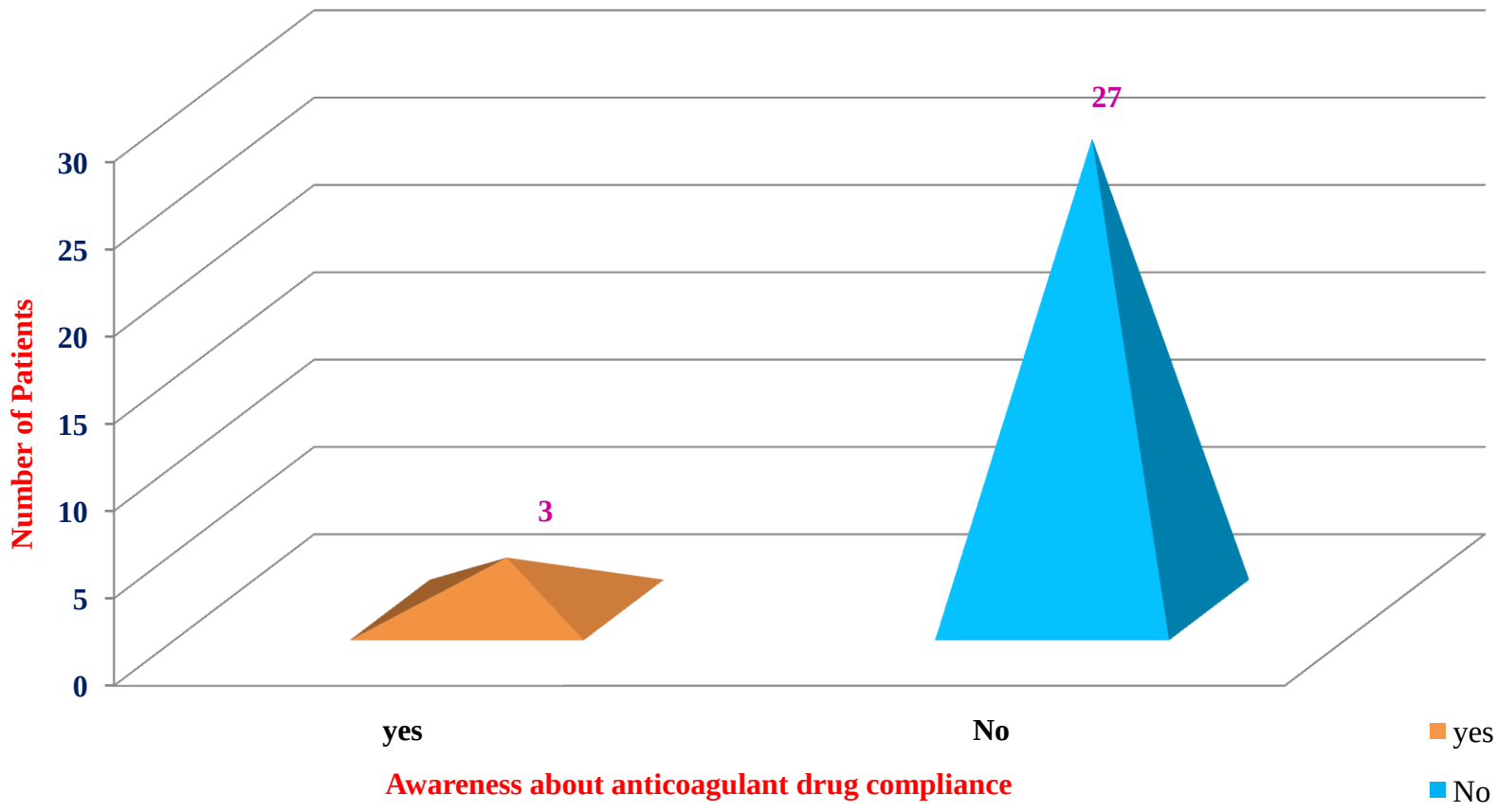


TABLE 4.2 DISTRIBUTION OF PRE TEST LEVEL OF KNOWLEDGE ON ANTICOAGULANT DRUG COMPLIANCE AMONG PATIENTS WITH MECHANICAL HEART VALVE.

n = 30

Level of knowledge	Scores	Pre test		Mean	SD
		Frequency	Percentage		
Adequate knowledge	16-20	0	0	9.93	2.71
Moderate knowledge	11-15	11	37		
Inadequate knowledge	1-10	19	63		

TABLE (4.2) shows the pre test level of knowledge on anticoagulant drug compliance among patients with mechanical heart valve. The results showed that in pre test 11(37%) patients had moderate knowledge, 19 (63%) patients had inadequate knowledge and none of them had adequate knowledge. The mean score was 9.93 with a SD of 2.71.

TABLE 4.3 DISTRIBUTION OF POST TEST LEVEL OF KNOWLEDGE ON ANTICOAGULANT DRUG COMPLIANCE AMONG PATIENTS WITH MECHANICAL HEART VALVE

n=30

Level of knowledge	**Scores**	**Post test**		**Mean**	**SD**
		Frequency	**Percentage**		
Adequate knowledge	16-20	25	83.33	17.3	1.9
Moderate knowledge	11-15	5	6.67		
Inadequate knowledge	1-10	0	0		

TABLE (4.3) shows the post test level of knowledge on anticoagulant drug compliance among patients with mechanical heart valve. The results showed that in post test 25(83.33%) patients had adequate knowledge, 5(6.67%) patients had moderate knowledge and none of the patients had inadequate knowledge. The post test mean score was 17.3 with a SD of 1.9.

TABLE 4.4 DISTRIBUTION OF PRE TEST AND POST TEST KNOWLEDGE SCORES ON ANTICOAGULANT DRUG COMPLIANCE AMONG PATIENTS WITH MECHANICAL HEART VALVE

n=30

Group	Mean of the differences	SD	Paired 't' value	df	Table value (5%)	Significant / Non significant
Pre test	7.37	3.41	11.84	29	1.699	S*
Post test						

S* Significant

TABLE (4.4) shows the comparison between pre test and post test knowledge level regarding anticoagulant drug compliance among patients with mechanical heart valve. 't' test value was calculated using paired't' test for difference of means.

In these, the mean difference was 7.37 with a SD of 3.41.The calculated 't'test value was (11.84) which is higher than the table value (1.699). Therefore there is a significant difference between the mean pre test and post test level of knowledge score regarding anticoagulant drug compliance.

FIGURE 4.6 COMPARISON BETWEEN MEAN PRE TEST & POST TEST KNOWLEDGE SCORES ON ANTICOAGULANT DRUG COMPLIANCE

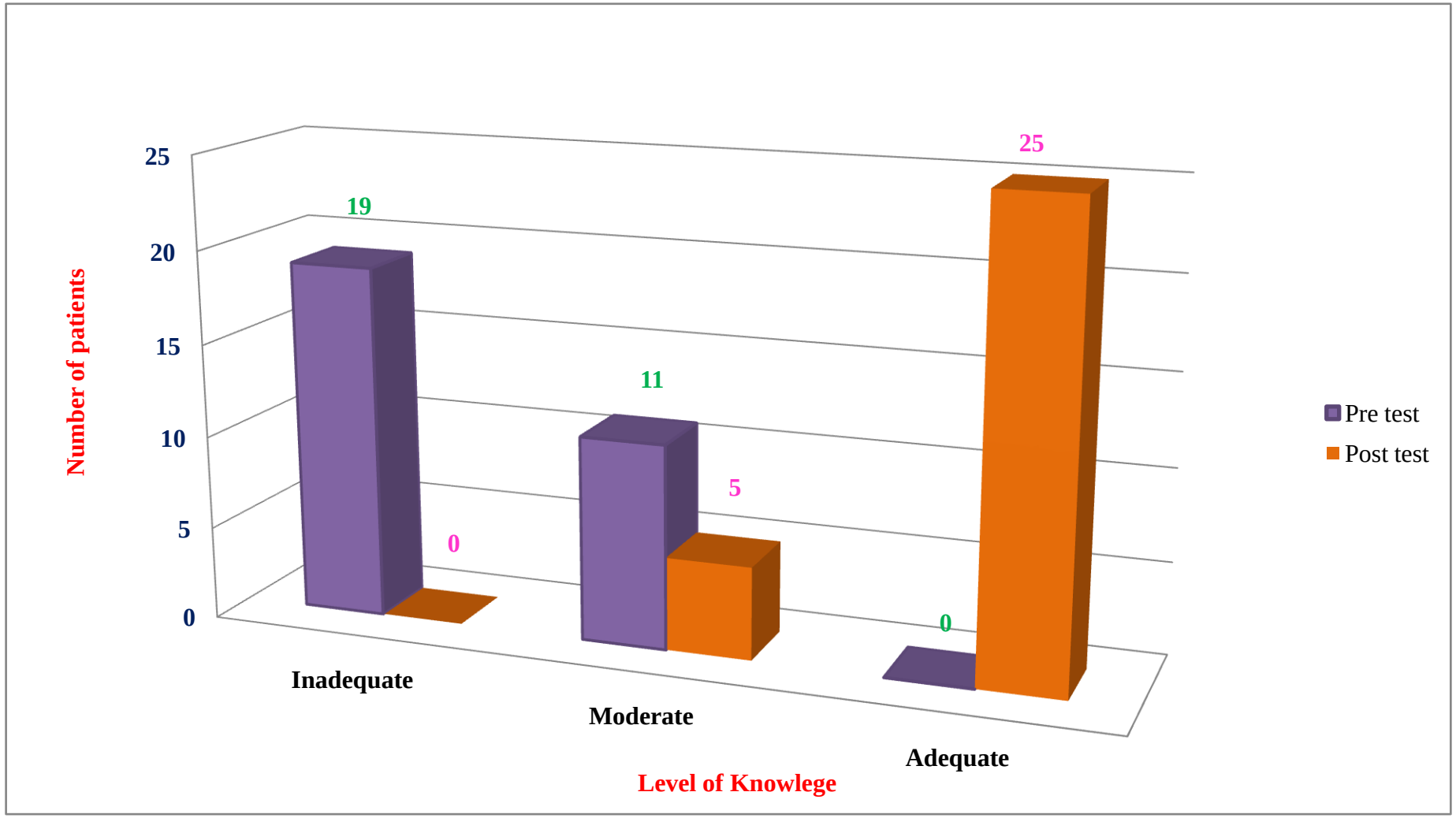


TABLE: 4.5 ASSOCIATION BETWEEN PRETEST KNOWLEDGE SCORE AND SELECTED DEMOGRAPHIC VARIABLES

n=30

SI No	Demographic variables	Level of Knowledge		Chi Square value	Table Value 5%
		Inadequate 1-10	Moderate 11-15		
1	Age				
	a. Below 30 yrs	5	0	χ^2=6.98	7.82
	b.30-40	7	4	df=3	NS*
	c.41 -50	6	3		
	d.51-60	1	4		
2	Sex				
	a. Male	6	4	χ^2=0.071	3.84
	b. Female	13	7	df=1	NS*
3	Education				
	a. Illiterate	3	5		
	b. Primary	4	0	χ^2=5.94	11.07
	c. Secondary	7	4	df=5	NS*
	d. High secondary	2	1		
	f. Under graduate	2	0		
	g. Post graduate	1	1		
4	Religion				
	a.Hindu	17	11	χ^2=1.24	3.84
	b.Muslim	2	0	df=1	NS*
5	Type of family				
	a.Nuclear family	14	8	χ^2=0.003	3.84
	c.Joint family	5	3	df=1	NS*
6	Occupation				
	a.Unemployment	12	4		
	b.Agriculture	4	0	χ^2=10.92	9.49
	c.Government	1	0	df=4	S*
	d.Private	2	5		
	e.Others	0	2		

7	Family income a. Less than Rs10,000 b.Rs 10,001-20,000	15 4	10 1	χ^2=0.717 df=1	3.84 NS*
8	Marital status a.Married b.Unmarried	17 2	9 2	χ^2=0.353 df=1	3.84 NS*
9	Previous history of any surgery a.Yes b.No	11 8	8 3	χ^2=0.660 df=1	3.84 NS*
10	Awareness of the anticoagulant drug prescribed a.Yes b.No	0 19	3 8	χ^2=5.757 df=1	3.84 S*

NS* - Significant **S*-** Significant

df - Degrees of freedom

Table (4.5) shows the association of pre test level of knowledge with demographic variables on anticoagulant drug compliance among patients with mechanical heart valve depicts the significance of association of pre test knowledge scores on anticoagulant drug compliance with demographic variables. It shows that the calculated chi square value of occupation is 10.929 at df = 4 and awareness of the anticoagulant drug prescribed is 5.757 at df = 1, significant at 0.05 level of significance. There is no association between the pre test knowledge scores and demographic variables such as age, sex, education, religion, type of family, family income, marital status and previous history of surgery.

CHAPTER - V

RESULTS AND DISCUSSION

The present study has been undertaken to identify the effectiveness of Structured Teaching Programme on Anticoagulant Drug Compliance among patients with Mechanical heart valve

The collected data for the present study was analyzed statistically and the results based on the objectives are discussed below:

1. To assess the knowledge of patients with mechanical heart valve on anticoagulant drug compliance.

Table (4.2) results reveal that pre test 19 patients (63%) had inadequate knowledge, 11 patients (37%) had moderate knowledge and no one had adequate knowledge. The mean score was 9.93 with a SD of 2.71.

Table (4.3) shows the post test level of knowledge on anticoagulant drug compliance among patients with mechanical heart valve. The results showed that in post test 25(83.33%) patients had adequate knowledge, 5 (6.67%) patients had moderate knowledge and none had inadequate knowledge. The mean score post test was 17.3 with a SD of 1.9.

Sara., et al (2011) conducted a cross-sectional study on 57patients. To determine the patients knowledge and adherence to oral anticoagulant drug therapy after mechanical heart-valve replacement surgery, for patients with congenital or acquired valve defects. Patient's knowledge was measured using the oral anticoagulation tool. A visual analogue scale was used to assess the adherence to therapy. Results revealed that most of the patients had lack of knowledge on oral anticoagulants, Three-quarters of patient's were 100% adherent to oral anticoagulant therapy, and about one fourth of the patients did not fully adhere to therapy.

Tang, EO., et al (2003) conducted a study to evaluate the patients' knowledge on warfarin and its relationship to anticoagulation control. 122 patients while attending warfarin clinic of prince of wale's hospital were interviewed. The knowledge on anticoagulant therapy and adherence to medical advice were tested

using 9 questions and found that patients' knowledge about warfarin was poor. Illiteracy was the main reason for not reading the booklet. Study found that there was a good correlation between patients' knowledge on warfarin and the international normalized ratio values and its target ranges.

The findings of the present study are in agreement with above cited studies which shows that patients prescribed with anticoagulant drug have lack of knowledge on anticoagulant drug compliance.

2. To compare the pre test and post test knowledge level regarding anticoagulant drug compliance among patients with mechanical heart valve.

Table (4.4) shows the comparison between pre test and post test knowledge level among patients with anticoagulants. In this the mean differences was 7.37 with a combined SD of 3.41 the calculated ‘t’value (11.84) was higher than the table value (1.699) with the degrees of freedom 29; therefore there was a significant difference in pre test and post test level of knowledge.

Thanh., et al (2011) conducted a study to find the long-term effects of patient education program on oral anticoagulation therapy. In comparison to a patient information brochure, patients were selected and separated into two groups. Demographic data and knowledge on oral anticoagulation therapy was collected. Video was shown to participants on oral anti coagulation therapy. The video was based on scientific literature by trained nurses, and along with a brochure on aspects of anticoagulant therapy was provided for the interventional group. After 6weeks of blood work, the patients were assessed to fill the knowledge assessment questionnaire; the results showed that patient education program increases basic knowledge about oral anticoagulation therapy.

Khudair. (2010) conducted a cross-sectional study in the outpatient anticoagulation clinic to evaluate the patients' knowledge on warfarin, in a teaching hospital in Qatar. Self administered questionnaire was offered to patients taking warfarin for at least 2 months in patients who were attending the cardiology or medical anticoagulation clinics in General Hospital Hamad. Results showed that an integrated and multidisciplinary education program can improve the patient’s knowledge on warfarin and its compliance.

Thus the above cited studies support the present study which shows the effectiveness of structured teaching programme on anticoagulant drug compliance among patients with mechanical heart valve.

3. To find the association between pre test knowledge score and selected demographic variables on anticoagulant drug compliance among patients with mechanical heart valves.

Table (4.5) shows the association of the pre test level of knowledge with demographic variables on anticoagulant drug compliance among patients with mechanical heart valve.

Table shows the calculated value of occupation as 10.929 at df = 4 and awareness of the anticoagulant drug prescribed as 5.757 at df = 1, significant at 0.05 level. Therefore occupation and awareness on anticoagulant drug prescribed has an association with the pre test knowledge score on anticoagulant drug compliance among patients with mechanical heart valve.

Table reveals that age, sex, education, religion, type of family, family income, marital status and previous history of surgery were not significant at 0.05 levels. Therefore there was no association with pre test level of knowledge and demographic variables on anticoagulant drug compliance among patients with mechanical heart valve.

Sayeed., et al (2011) conducted a quasi-systematic review of the literature through electronic database searches, mainly to review the older patient's challenges in warfarin education in terms of knowledge. 62 articles were reviewed and found that increased patient knowledge result in better anticoagulation control. Demographic factors like advancing age, limited health literacy and lower family income, were found to be inversely affect patients' warfarin knowledge in different practice settings. And found that the demographic factors had mild association with patient's warfarin knowledge.

Hu, A., et al (2006) conducted a telephonic survey to find the influence of in-hospital teaching practices as well as demographic variables and socioeconomic status on patients' knowledge about warfarin therapy. The knowledge of 100 patients were

assessed after 3 to 6months of mechanical heart valve surgery, using a 20 item tool. Demographic information's, such as socio economic status including educational status were collected and results revealed that sixty-one percent of participants had scores showing insufficient knowledge on warfarin therapy. Patient's age was not related to warfarin knowledge level. Patient's family income was greater than $25,000for those, who were employed or self-employed. The patients with education greater than grade 8, had a significantly higher knowledge scores on warfarin therapy. Variables like sex, race, and warfarin therapy before surgery were not associated to the level of knowledge on warfarin.

In the view of the above cited studies, comparison of pre test knowledge scores shows that there is a mild or negligible association between the level of knowledge on anticoagulant drug compliance and demographic variables.

CHAPTER - VI

SUMMARY, CONCLUSION, NURSING IMPLICATIONS AND RECOMMENDATIONS

This chapter represents the summary, finding, conclusion, implications and recommendations which create a base for researcher for evidence based practice.

SUMMARY

Extensive review of literature and expert's guidance led the researcher to design the methodology and the purpose of the study. The study was to assess the effectiveness of structured teaching programme on anticoagulant drug compliance among patients with mechanical heart valve in GKNM Hospital, Coimbatore

Context evaluation, input evaluation, process evaluation and product evaluation (CIPP) theory was adopted for conceptual framework pre experimental one group pretest posttest design was selected for this study using the convenient sampling technique. Pilot study was conducted for nine days with six samples to assess the reliability and feasibility of the tool. The reliability was checked using the Spearman's split half method.

The main study was conducted from 29.07.2013 to 24.08.2013.30 and 30 samples were selected using the convenient sampling technique. Data collection was done for a period of four weeks. The pretest was conducted using the semi structured interview questionnaire to assess knowledge level on anticoagulant drug compliance among patients with mechanical heart valve. On the same day structured teaching programme on anticoagulant drug compliance was administered after which posttest was conducted on the day of discharge. The data collected was analyzed using both descriptive and inferential statistics.

The findings of the study revealed that structured teaching programme on anticoagulant drug compliance is effective in improving knowledge level of patients.

CONCLUSION

The findings of the study proved that patient's knowledge about anticoagulant drug compliance was inadequate and the structured teaching programme on anticoagulant drug compliance was effective in improving the knowledge level of patients about anticoagulant drug compliance.

NURSING IMPLICATIONS

The findings of the study have implications for various areas of nursing practice, nursing education, nursing administration and nursing research

Nursing Practice

The role of nurses in patient education cannot be overlooked **(Monsivais & Reynolds, 2003).**

- The nurse plays an important role in disease prevention & health promotion education program with effective strategies, which motivate the people to follow healthy practices in day to day life. Step should be taken to educate the patients to make them aware about anticoagulant drug compliance structured teaching programme once developed and evaluated to teach other groups of patients.
- Structured teaching programme on anticoagulant drug compliance can be introduced as a routine programme for patients with mechanical heart valve in clinical areas.
- Nurses can develop a positive attitude towards performance of structured teaching programme on anticoagulant drug compliance among patients with mechanical heart valve.
- Nurses can help saving the lives of many by teaching and creating awareness on anticoagulant therapy in patients with mechanical heart valve.
- Nurses can develop Evidence Based Practice and include structured teaching programme on anticoagulant drug compliance among patients with mechanical heart valve as a routine teaching programme.

Nursing Education

Findings of present study have an implication in nursing education.

- The curriculum of student nurses should include the importance of anticoagulants for patients with mechanical heart valve
- The nurse educator must be able to assess the student nurses knowledge regarding anticoagulant drug compliance
- The nurse educator should arrange continue nursing education for staff nurses by regularly updating their knowledge on anticoagulant drugs and its compliance.

Nursing Administration

The findings of present study will help nurse administrators to organize and plan for various programmes to provide immediate teaching for patients about awareness on anticoagulant drugs after mechanical heart valve replacement surgery

- Nurse administrator can plan in service education / continue nursing education programs regarding anticoagulant drug and its compliance for mechanical heart valve replacement patients
- Arrangement of an exclusive nurse specialist who can collaborate with the multidisciplinary team, in order to support and educate awareness of anticoagulants on mechanical heart valve replacement patients.
- Nurse administrator should implement outreach programs to make the public aware.

Nursing Research

- The present study is an attempt to assess the effectiveness of structured teaching programme on anticoagulant drug compliance among patients with mechanical heart valve.
- Nursing research on importance of anticoagulant drug compliance will be a valuable reference material for further researchers.
- Qualitative study can be undertaken to assess the self report of the participants.

RECOMMENDATIONS

This study recommends the following for further research

- The study can be conducted with large sample size.
- Similar study can be conducted with a qualitative approach.
- A similar study can be undertaken to a different population in different settings.
- A similar study can be done using a different method of teaching the importance of anticoagulant drug among patients with mechanical heart valve.
- A similar study can be conducted to compare different methods of teaching the importance of anticoagulant drug among patients with mechanical heart valve.

REFERENCES

BOOKS

1. **Basavanthappa, B. T., (2007).** Nursing Theories. 1st edition. New Delhi:Jaypee Brothers Medical Publishers.

2. **Black, J.M. and Jacobs, E.M., (2007).** Medical Surgical Nursing. 5th edition. Philadelphia: W.B.Saunders Company.

3. **Black, M. Joyce., (2001).** Textbook of Medical Surgical Nursing. Edition. New York: Saunders Publishers.

4. **Brunner and Suddarth., (2010).** Medical and Surgical Nursing. 10th edition.Williams and Wilkins.

5. **Brunton and lazo., (2014).** The goodman and gilman's manual of pharmacological therapeutics Suivez l'actualité des Éditions: lavoisier s.a.s.

6. **Dennis, F., pollit., and Bernadette. (2004). Nursing research**. Lippincott Williams and wilkins.

7. **Eric, J. Topol., (2002).** Textbook of Cardiovascular medicine. 2nd edition.Lippincott & Williams and Wilkins

8. **Gupta, S. P. (2005).** Statistical methods. New delhi: sultan chand & Sons education publishers.

9. **Huntsberger, and billingsley, P. (1989).** Statistical inference.United states of america: brown publishers.

10. **Ignatavicius, V. and Linda, W., (2004).** Text Book of Medical Surgical Nursing.4th Edition. Philadelphia: W.B. Saunders Company.

11. **Kothari, C.R., (1996).** Research methodology, methods and technologies.New Delhi: VishwaPrakshan Publishers.

12. **Linda Skidmore-Roth., (2014).** Mosby's 2014 Nursing Drug Reference:Elsevier Mosby publication

13. **Lynda, D. Urdan., (2010).** Critical care Nursing. 6th edition. Mosby Publishers.

14. **Lynda, S. Williams., (2003).** Medical Surgical Nursing. 2nd edition.Philadelphia: F A Davis Company.

15. **Newall, C. A., et al (1996).** Herbal medicines. A guide for health-care professionals.: lavoisier s.a.s.

16. **Polit, d.f., and beck, C.T. (2006).** Nursing research. New delhi: wolters Kluwer health publication.

17. **Polit, d.f., and hungler, B.P. (1999).** Nursing research. Philadelphia: Lippincott publishers.

18. **Potter, and Perry., (2008).** Fundamentals of Nursing. 6th edition. New Delhi:Elsevier.

19. **Ross, and Wilson., (2006).** Anatomy and Physiology. 10th edition. New Delhi:Elsevier.

20. **Sunder, rao., and richard, J. (1996).** An introduction to biostatistics.New delhi: vora medical publications

21. **Susan, L. Wood., (2011).** Cardiac Nursing. 6th edition. Lippincott Williams& Wilkins.

22. **Tortora, G. J. (1996**). Principles of anatomy and physiology. New York: harpen collins college publishers.

JOURNALS

1. **Akhtar RP, A. A. (2009)**. Aniticoagulation in patients following prosthetic heart valve replacement. Annals of thoracic cardiovascular surgery, 15 (1), 10-17.

2. **Ansell J., et al (2004).** The pharmacology and management of the vitamin K antagonists: the Seventh ACCP conference on antithrombotic and thrombolytic therapy. Chest 126 (3):204s-233s.

3. **Baker, J.W., and Kristi L. Pierce, C. A. (2011)**. INR Goal Attainment and Oral Anticoagulation Knowledge of Patients Enrolled in `Anticoagulation. Journal of Managed Care Pharmacy, 17 (2), 133-142.

4. **Benesova. (2011).** Antithrombotic therapy after heart valve surgery--current evidence and future trends. Cas Lek Cesk. , 150 (4-5), 229-235.

5. **Butchart, E.G., et al (2001)**. Better anticoagulation control improves survival after valve replacement. Journal of Cardiothoracic Surgery, 26, 123-125.

6. **Butchart, G. (2005).** Recommendations for the management of patients. European Heart Journal, 26, 2463–2471.

7. **Chiquette, Elaine., et al (1998).** Comparison of an anticoagulation clinic with usual medical care anticoagulation control, patient outcomes, and health care costs free. Archives of Internal Medicine, 158 (15), 1641-1647.

8. **Christensen, T.D., (2003).** Mechanical heart valve patients can manage oral anticoagulant therapy themselves. European Journal of Cardiothoracic Surgery , 23 (3), 292-298.

9. **Claes, N., et al (2005).**The Belgian Improvement Study on Oral Anticoagulation Therapy: a randomized clinical trial. European Heart Journal, 26,2159-2165

10. **Crowther., and Warkentin. (2008).** Bleeding risk and the management of bleeding complications in patients undergoing anticoagulant therapy: focus on new anticoagulant agents. Blood journal, 111 (10), 4871-4879.

11. **D.Puri., et al (2008).** Early anticoagulation after mechanical valve implantation, and related complications, journal of heart valve dysfunction, 17(4):418-24

12. **Davis, N.J., et al (2005). I**mpact of adherence, knowledge, and quality of life on anticoagulation control. Annals of Pharmacotherapy , 39 (4), 632-636.

13. **Doris, barcellona., P. C. (2002).** Patient education and oral anticoagulant therapy. haematological, 87 (10), 1081-1086.

14. **Eikelboom., M.S. (2013).** Dabigatran versus warfarin in patients with mechanical heart valves. New England Journal of Medicine, 369, 1206-1214.

15. **Emery, RW. (2008).** Anticoagulation for mechanical heart valves: a role for patient based therapy. Journal of Thrombolysis, 25 (1), 18-25.

16. **Fang, MC., et al (2006).** Health literacy and anticoagulation-related outcomes among patients taking warfarin. General Internal Medicine, 21 (8), 841–846.

17. **Gadisseur, AA., et al (2004).** Patient self-management of oral anticoagulant care vs. Management by specialized anticoagulation clinics: positive effects on quality of life. Journal of Thrombosis and Haemostasis, 2 (4), 584-591.

18. **Garver, D., et al (1995).** The epidemiology of prosthetic heart valves in the United States. Texas Heart Institute Journal, 22 (1), 86-91.

19. **Goldhaber, Z. (2006).** Bridging and Mechanical Heart Valves. Journal of circulation, 113, 470-472.

20. **Hasan, SS., et al (2011)**. Factors affecting warfarin-related knowledge and INR control of patients attending physician- and pharmacist-managed anticoagulation clinics. Journal of Pharmacy Practice, 24 (5), 485-493.

21. **Hasenkam, JM. (1997).** Self management of oral anticoagulant therapy after heart valve replacement. European Journal of Cardiothoracic Surgery, 11 (5), 935-942.

22. **Hu., et al (2006)**. Factors influencing patient knowledge of warfarin therapy after mechanical heart valve replacement. Journal of Cardiovascular Nursing, 21 (3), 169-175.

23. **Hua, T.D., et al (2011)**. Practice nursed-based, individual and video-assisted patient education in oral anticoagulation - Protocol of a cluster-randomized controlled trial. BMC Family Practice, 10, 12-17.

24. **Jack, A.J. (2005).** Guidelines for implementation of patient self-testing and patient self-management of oral anticoagulation. International Journal of Cardiology, 99, 37– 45.

25. **James, L., et al (2008).** Best strategies for patient education about anticoagulation with warfarin: a systematic review. BMC Health services Research, 8 (40).

26. **Joel., et al (2011).** Aortic valve surgery: marked increases in volume and significant decreases in mechanical valve use-an analysis of 41,227 patients over 5 years from the Society for Cardiothoracic Surgery in Great Britain and Ireland National database. Journal of Thoracic & Cardiovascular Surgery, 142 (4), 776-782.

27. **Kagansky, N., et al (2004).** Safety of anticoagulation therapy in well-informed older patients. Arch Internal Medicine. Volume; 164, 2044–2050.

28. **Khudair., Y. I. (2010).** Evaluation of patients' knowledge on warfarin in outpatient anticoagulation. Saudi medical Journal, 304, 672-677.

29. **Landefeld, C. S., and Anderson, P. A. (1992).** Guideline-based consultation to prevent anticoagulant-related bleeding: a randomized, controlled trial in a teaching hospital. Annals of Internal Medicine, 116 (10), 829-837.

30. **Lewis, BE., et al (2003).** Argatroban anticoagulation in patients with heparin-induced thrombocytopenia. Arch Internal Medicine, 163, 1849-1856.

31. **Mair.,et al (2011).** Long-term self-management of anticoagulation therapy after mechanical heart valve replacement in outside trial conditions, Interact Cardiovascular Thorac Surgery,14 (3), 253-257.

32. **Mark Steciuk, P.T. (2009).** A simple tool to educate laboratory staff about anticoagulation. The American Journal of Primary Health, 34 (3), 49 - 50.

33. **Massel, L. S. (2013).** Antiplatelet and anticoagulation for patients with prosthetic heart valves. Cochrane Database Systematic Review, 9 (7).

34. **Meenakshisundaram, R., and Thirumalaikolundusubramanian, P. (2009).** Valvular heart disease in Indian subcontinent: social issues. Indian Journal of Community Medicine, 34 (1), 57–58.

35. **Nadar, S., et al (2003).** Patients' understanding of anticoagulant therapy in a multiethnic population. Journal of the Royal Society of Medicine, 96 (4), 175–179.

36. **Nasser, S., et al (2011).** Challenges of older patients' knowledge about warfarin therapy. Journal of Primary Care & Community Health, 10.

37. **Newall., et al (2005).** Patient understanding of warfarin therapy: A review of education strategies. Haematology, 10 (6), 437-442.

38. **Ogendo S, W. O. (2000).** Long term valve-related morbidity following open-heart surgery at the Kenyatta National Hospital,77(4), 199-202.

39. **Ozeren M., et al (2001).** Clinical results of the ATS prosthetic valve in 240 implants and review of the literature, journal of heart valve dysfunction, 10(5), 628-635.

40. **Pernod, G., et al (2008).** Reduction of oral anticoagulant-related adverse events after patient education: a prospective multicenter open randomized study. Journal of general internal medicine, 23 (9), 1441-1446.

41. **Peter, TS. (1999**). A structured teaching and self-management program for patients receiving oral anticoagulation a randomized controlled trial. JAMA, 281 (2), 145-150.

42. **Piazza., et al (2011).** Anticoagulation-associated Adverse Drug Events. The American Journal of Medicine, 124 (12), 1136-1142.

43. **Pibarot, J.G. (2009).** Valvular heart disease: changing concepts in disease management. Circulation, 119, 1034-1048.

44. **Prendergast., and Tornos. (2010).** Valvular Heart Disease: Changing Concepts in Disease Management, circulation Journal, 121, 1141-1152

45. **Rocha., et al (2010).** Knowledge of patients with mechanical valve prostheses concerning chronic oral anticoagulant therapy. Latino-Americana de Enfermagem, 18 (4).

46. **Salem., et al (2001).** Antithrombotic Therapy in patients with mechanical prosthetic heart valves. Chest, 119 (1), 207S–219S.

47. **Sawicki., et al (2003).** Long-Term Results of Patient's self management of oral anti coagulation. Journal of Clinical and basic cardiology, 6 (1), 59-62.

48. **Seiler, Christian. (2004)** Management and follow up of prosthetic heart valves, Heart Journal, 90(7), 818-824.

49. **Seshadri N, G. S. (2005).** The clinical challenge of bridging anticoagulation with low-molecular-weight heparin in patients with mechanical prosthetic heart valves: an evidence-based. American Heart journal, 150 (1), 27-34.

50. **Smith, D. E., et al (2010).** Trial of an educational intervention on patients' knowledge of atrial fibrillation and anticoagulant therapy, INR control, and outcome of treatment with warfarin. BMC Cardiovascular Disorders Journal, 10 (21).

51. **Smyth, Robyn. (2004).** Exploring the usefulness of a conceptual framework as a research tool: A researcher's reflections, Issues In Educational Research, 14(2), 167-180.

52. **Stone., et al (1989).** Comparison between videotape and personalized patient education for anticoagulant therapy, Journal of family practice, 29(1), 55-7.

53. **Tang., et al (2003).** Relationship between patients' warfarin knowledge and anticoagulation control. The Annals of Pharmacotherapy, 37 (1), 34-39.

54. **Tremey., et al (2009).** Teaching improves adherence to clinical guidelines in the treatment of oral anticoagulation-related severe bleeding in the emergency department. Intensive Care Medicine , 35 (8), 1444-1448.

55. **Van, Damme S. (2011).** Patient knowledge of and adherence to oral anticoagulation therapy after mechanical. Heart Lung , 40 (2), 139-146.

56. **Verret., et al (2012).** Impact of a pharmacist-led warfarin self-management program on quality of life and anticoagulation control: a randomized trial, Pharmacotherapy, 32(10), 1-9.

57. **Watzke HH. (2000).** A prospective controlled trial comparing weekly self-testing and self-dosing with the standard management of patients on stable oral anticoagulation. Thrombosis and Haemostasis, 83 (5), 661-665.

58. **Witt, D.M., et al (2005).** Effect of a centralized clinical pharmacy anticoagulation service on the outcomes of anticoagulation therapy. J Chest, 127 (5), 1515-1522.

59. **Yu HY, L. C. (2005**).Relationship of International Normalized Ratio to bleeding and thromboembolism rates in Taiwanese patients receiving vitamin k antagonist after mechanical valve replacement. Journal of Medical Association, 104 (4), 236-243.

60. **Zeolla MM., et al (2006).** Development and validation of an instrument to determine patient knowledge: the oral anticoagulation knowledge test. Annals of pharmacotherapy, 40(4), 633-638

e -REFERENCE

1. **Aurigemma and Gaasach, Management of patients with prosthetic heart valves, (2013).** http://www.uptodate.com/contents/management-of-patients-with-prosthetic-heart-valves

2. **Austin, TX (2006**). On-X Valve Reduced Anticoagulation Clinical Trial, http://m.medindia.net/patientinfo/mitral-valve-regurgitation-replacement-overview.htm

3. **Bayer. (2014).** Anticoagulantshttp://www.thrombosisadviser.com/en/stroke-prevention-in-af/anticoagulants/?WT.cusCampaignVendor=AdWords&WT.

4. **Dal, avinash. (2012).** Oral anticoagulation, http://bestcardiacsurgery.com/articles

5. **E, Thompson, Gregory. (2010).** Heart valve repair or replacement for mitral valve regurgitation or prolapsed, http://www.webmd.com/heart-disease/heart-valve-repair-or-replacement-for-mitral-valve-regurgitation-or-prolapse

6. **Heisler, Jennifer. (2012).** Heart Valves: Where They Are and What They Do, http://surgery.about.com/od/beforesurgery/qt/HeartValves.htm
7. **Importance of your heart and ways to save your heart. (2010).** http://ursdipak.hubpages.com/hub/Importance-of-your-heart-and-ways-to-save-your-heart
8. **Mark N. Levine., et al (2001).** Hemorrhagic Complications of Anticoagulant Treatment,http://journal.publications.chestnet.org/article.aspx?articleid=1079422

9. **Mathew., and Kumar. (2010).** Reversal of Anticoagulation, ACEP News, http://www.acep.org/content.aspx?id=48698

10. **ST. Jude Medical, Mechanical Heart Valves, (2007).** http://health.sjm.com/heart-valve-answers/treatment-options/heart-valve-replacement/mechanical-valves

11. **Stevens, Ronelle E. (2013).** Anticoagulation and Heart Valve Replacement, http://www.pharmacytimes.com/publications/issue/2013/February2013/Anticoagulation-and-Heart-Valve-Replacement

12. **Strategic Insights: Heart Valve Replacement Market – India, (2012)**. http://dolcera.com/wiki/index.php?title=Strategic_Insights:Heart_Valve_Replacement_Market_-_India
13. **Valve Surgery Options, (2007).** http://www.womensheart.org/content/HeartSurgery/heart_valve_replacment.asp

APPENDIX – A

PERMISSION TO CONDUCT THE STUDY

Ms.Jenifer.D II year M.Sc Nursing Student conducted a study on **"A Study to Assess the Effectiveness of Structured Teaching Programme on Anticoagulant Drug Compliance among Patients with Mechanical heart Valve in GKNM Hospital, Coimbatore"** With the approval of the ethical committee during the academic year of 2013 – 2014 in GKNM Hospital, Coimbatore. This is the partial fulfillment of the requirement for award of the degree in Master of Science, Branch-I, Medical Surgical Nursing, subspecialty - Cardiovascular and Thoracic Nursing, by the Tamil Nadu Dr. MGR Medical University.

Dr. RamkumarRaghupathy, M.S., M.Ch.,FIAPS., MBA.,
DEAN

APPENDIX – B

LIST OF EXPERTS

Dr. SUNDAR RAMANATHAN., M.S.,M.Ch (Thor).,
FRCS(Ed).,FRCS (CTh).,
Consultant Cardio Thoracic Surgeon,
Department of Cardiovascular and Thoracic Surgery,
G.Kuppuswamy Naidu Memorial Hospital,
Coimbatore - 37.

Dr. S. MURALIDHARAN, M.S., M.Ch (Thor)., FACS., FIACS.,
HOD,Department of Cardiovascular and Thoracic Surgery,
G.Kuppuswamy Naidu Memorial Hospital,
Coimbatore - 37.

Dr.S.MADHAVI, Ph.D (N).,
Principal,
KMCH College of Nursing,
Coimbatore - 641014.

Prof. RAJI, MS.c (N), Ph.D (N).,
HOD, Department of Medical and Nursing,
KG College of Nursing,
Coimbatore - 641 018.

Prof. TAMILSELVI, M.Sc (N).,
HOD, Department of Medical and Nursing,
PSG College of Nursing,
Coimbatore - 641 004

APPENDIX – C1

DATA COLLECTION TOOL

STRUCTURED INTERVIEW GUIDE

SECTION A: DEMOGRAPHIC PROFILE

INSTRUCTIONS: SAMPLE NO:

- Please give appropriate response to the following statements
- The information obtained will be kept confidential and is used only for the intended work.

1. Age
    a) Below 30 yrs
    b) 31-40 yrs
    c) 41-50 yrs
    d) 51-60 yrs
    e) 61-70 yrs
    f) Above 70 yrs
2. Sex
    a) Male
    b) Female
3. Education
    a) Illiterate
    b) Primary
    c) Secondary
    d) Higher secondary
    e) Under graduate
    f) Post graduate

4. Religion

    a) Hindu
    b) Christian
    c) Muslim
    d) Others

5. Type of family

a) Nuclear family
b) Joint family

6. Occupation

a) Unemployment
b) Agriculture
c) Business
d) Medical
e) Government
f) Private
g) Others

7. Family income

a) Less than 10,000 Rs
b) 10,001-20,000 Rs
c) 20,001-30,000 Rs
d) Above 30,000 Rs

8. Marital status

a) Married
b) Unmarried

9. Previous history of any surgery

a) Yes
b) No

10. Are you aware of the anticoagulant drug prescribed?

a) Yes
b) No

SECTION B: STRUCTURED KNOWLEDGE INTERVIEW QUESTIONNAIRE

1. How many liters of blood is available in adult body ?

   a. 1 - 5 liters
   b. 4 - 6 liters
   c. 6 - 8 liters
   d. 9 - 10 liters

2. Which vitamin helps the blood to clot ?

   a. Vitamin A
   b. Vitamin D
   c. Vitamin E
   d. Vitamin K

3. What is the sample taken for checking clotting time?

   a. Urine
   b. Blood
   c. Sputum
   d. Motion

4. What is the duration for the blood to clot ?

   a. 0 - 2 mts
   b. 1 - 3 mts
   c. 5 - 10 mts
   d. 15 - 30 mts

5. What is the name of the investigation for checking the blood clotting?

   a. Prothrombin time
   b. Packed cell volume
   c. Complete blood count
   d. Bilirubin test

6. What is the normal value of Prothrombin time?

a. 5.5-10 sec
b. 11.5-18 sec
c. 12.5-20 sec
d. 18.5-20 sec

7. How often is your Prothrombin test to be done after heart valve replacement?

a. Once in a week
b. Once in a month
c. Once in 3 months
d. Once in a year

8. What is the action of anti coagulant drug?

a. Makes blood thicker
b. Makes blood thinner
c. Prevent bleeding
d. Prevent infection

9. Where will you store anticoagulants?

a. Refrigerator
b. Under direct sunlight
c. Dry place
d. Cool place

10. What is the best time to take anticoagulant drug?

a. Lunch time -12pm
b. Evening - 6pm
c. Morning - 6am
d. Any time of the day

11. How long are you expected to take anticoagulants after surgery?

    a. 1 year
    b. 1 month
    c. Depends on the type of heart valve replaced
    d. Life long

12. What will you do if you forget to take your anticoagulant tablet?

    a. Skip the dose
    b. Take the tablet as soon as you remember
    c. Take two doses of tablet
    d. Take ½ the tablet

13. What are the symptoms due to less dose of anticoagulant drug?

    a. Slurring of speech and stroke
    b. Difficulty in breathing
    c. Unconsciousness
    d. All of the above

14. What are the symptoms due to overdose of anticoagulant drug?

    a. Bleeding gums
    b. Bloody or red colour urine
    c. Red or black stools
    d. All of the above

15. What is the most common sideffects of anticoagulant drug?

    a. Tendency to bleed easily
    b. Chest pain
    c. Head ache
    d. Fainting spells

16. What are the activities to be avoided while on anti coagulants

    a. Straining while defecation
    b. Cuts and falls
    c. Gardening & sewing
    d. All of the above

17. What are the first aid measures to be done while bleeding?

    a. Wash with running water
    b. Apply pressure
    c. Elevate the affected area
    d. All of the above

18. How to maintain the body weight when on anti coagulant drug?

    a. Increase the weight
    b. Decrease the weight
    c. Maintain constant body weight
    d. Variable body weight

19. When is it necessary to inform to other physicians and dentist about the intake of anticoagulants?

    a. Inform before the treatment
    b. Not necessary to inform
    c. Inform during the treatment
    d. Inform after the complication occurs

20. What are the life style modifications to be followed while on anticoagulant drug?

    a. Stop smoking & drinking
    b. Stop smoking
    c. Stop drinking
    d. Stop fast foods

ANSWER KEY

Scoring procedure

Each correct response gets a score of one (1). There are 20 items and hence the maximum score for the knowledge questions is 20

Q.NO	ANSWER	Q.NO	ANSWER
1.	b.	11.	d.
2.	d.	12.	a.
3.	b.	13.	d.
4.	c.	14.	d.
5.	a.	15.	a.
6.	b.	16.	d.
7.	c.	17.	d.
8.	b.	18.	c.
9.	c.	19.	a.
10.	b.	20.	a.

SCORING AND INTERPRETATION

Level of knowledge	*Score*	*Percentage*
Adequate	*0-10*	*50 %*
Moderate	*11-15*	*51-75 %*
Inadequate	*16-20*	*76-100 %*

APPENDIX – C2

STRUCTURED INTERVIEW GUIDE – TAMIL

வடிவமைக்கப்பட்ட நேர்முகக்காணல் வினாத்தாள்-ஆ

சுய சமுக் குறிப்பு

- கேட்கும் கேள்விகளுக்கு சரியான விடையளிக்கவும்
- நீங்கள் கொடுக்கும் விபரங்கள் ரகசியமாக பாதுகாக்கப்படும்

1. வயதுவரம்பு
    1) 30 வயதுக்கு கீழ்
    2) 31-40 வரை
    3) 41-50 வரை
    4) 51-60 வரை
    5) 61-70 வரை
    6) 71 வயதுக்கு மேல்
2. இனம்
    1) ஆண்
    2) பெண்
3. படிப்பு
    1) படிக்காதவர்
    2) ஆரம்பக்கல்வி
    3) இடைநிலைக்கல்வி
    4) மேல்நிலைக்கல்வி
    5) இளநிலைக்கல்வி
    6) முதுநிலைக்கல்வி
4. மதம்
    1) இந்து
    2) முஸ்லிம்
    3) வேறு மதங்கள்
5. குடும்ப அமைப்பு
    1) தனிக் குடும்பம்
    2) கூட்டுக் குடும்பம்
6. தொழில்
    1) வேலை இல்லை
    2) விவசாயம்
    3) சுய தொழில்
    4) மருத்துவம்

5) அரசு பணியாளர்

6) தனியார் பணியாளர்

7) வேறு வகையான தொழில்கள்

7. மாத வருமானம்

1) ₹ 10000 க்கு கீழ்

2) ₹ 10001-20000 வரை

3) ₹ 20000-30000 வரை

8. திருமணத் தகுதி

1) திருமணமானவர்

2) திருமணமாகாதவர்

9. முந்தய அறுவை சிகிச்சை

1) ஆம்

2) இல்லை

10. இரத்த உறை தடுப்பு மருந்தை பற்றி கேள்விப்பட்டிருக்கிறீர்களா?

1) ஆம்

2) இல்லை

வடிவமைக்கப்பட்ட நேர்முகக்காணல் வினாத்தாள்-ஆ

1. மனித உடலில் சுமார் எத்தனை லிட்டர் இரத்தம் உள்ளது?

அ) 1 – 5 லிட்டர்

ஆ) 4 – 6 லிட்டர்

இ) 6 – 8 லிட்டர்

ஈ) 9 – 10 லிட்டர்

2. எந்த வைட்டமின் இரத்த உறைதலுக்கு உதவுகிறது?

அ) வைட்டமின் - எ

ஆ) வைட்டமின் - டி

இ) வைட்டமின் - இ

ஈ) வைட்டமின் - கே

3. இரத்தம் உறைதலுக்கான நேரத்தை கண்டு பிடிக்க செய்யப்படும் சோதனைக்கு பயன்படுத்தப்படும் மாதிரி என்ன?

அ) சிறுநீர்

ஆ) இரத்தம்

இ) சளி

ஈ) மலம்

4. இரத்தம் உறைதலுக்கு எடுத்துக் கொள்ளப்படும் நேரம் என்ன?

அ) 0 – 2 விநாடிகள்

ஆ) 1 – 3 விநாடிகள்

இ) 5 – 10 விநாடிகள்

ஈ) 15 – 30 விநாடிகள்

5. இரத்தம் உறைதலுக்கான நேரத்தை கண்டுபிடிக்க செய்யப்படும் சோதனையின் பெயர் என்ன?

அ) புரோத்ராம்பின் நேர சோதனை

ஆ) பேக் செல் தொகுதி

இ) முழு இரத்த எண்ணிக்கை

ஈ) பிலிரூபின் சோதனை

6. புரோத்ராமின் நேர சோதனையின் சரியான அளவு என்ன?

அ) 5.5 – 10 நொடிகள்

ஆ) 1.5 – 18 நொடிகள்

இ) 12.5 – 20 நொடிகள்

ஈ) 18.5 – 20 நொடிகள்

7. இருதய வால்வு மாற்று அறுவை சிகிச்சையின் பிறகு புரோத்ராம்பின் சோதனை எப்பொழுதெல்லாம் செய்ய வேண்டும்?

அ) வாரத்திற்கு ஒரு முறை

ஆ) மாதத்திற்கு ஒரு முறை

இ) மூன்று மாதத்திற்கு ஒரு முறை

ஈ) வருடத்திற்கு ஒருமுறை

8. இரத்தம் உறைதடுப்பு மருந்தின் வேலை என்ன?

அ) இரத்தத்தை கட்டியாக்குகிறது

ஆ) இரத்தத்தை மெலிதாக்குகிறது

இ) இரத்தக்கசிவை தடுக்கிறது

ஈ) நோய் தொற்றை தடுக்கிறது

9. இரத்த உறை தடுப்பு மருந்தை எந்த இடத்தில் பத்திரப்படுத்தி வைக்கலாம்?

அ) குளிர்சாதனப் பெட்டி

ஆ) சூரிய ஒளியின் கீழ்

இ) உலர்ந்த இடம்

ஈ) குளிர்ந்த இடம்

10. இரத்த உறை தடுப்பு மருந்தை எடுப்பதற்கான சரியான நேரம் என்ன?

அ) மதிய உணவிற்கு பின் – 12 மணியளவில்

ஆ) மாலை – 6 மணி

இ) காலை – 6 மணி

ஈ) எந்த நேரத்திலும்

11. இருதய வால்வு அறுவை சிகிச்சைக்குப் பிறகு இரத்த உறை தடுப்பு மருந்தை எவ்வளவு காலம் எடுக்க வேண்டும்?

அ) ஒரு வருட அளவு

ஆ) ஒரு மாத அளவு

இ) இருதய வால்வு வகையை சார்ந்தது

ஈ) வாழ்நாள் முழுவதும்

12. இரத்த உறைதடுப்பு மருந்தை எடுக்க தவறிவிட்டால் என்ன செய்வீர்கள்?

அ) எடுக்க தவறிய மாத்திரையை விட்டுவிடுலாம்

ஆ) நினைவு வந்தவுடன் மாத்திரையை எடுத்துக்கொள்ளலாம்

இ) இரண்டு மாத்திரைகள் எடுத்துக் கொள்ளலாம்.

ஈ) அரை மாத்திரை எடுத்துக் கொள்ளலாம்

13. இரத்த உறை தடுப்பு மருந்தின் அளவு குறைவதால் ஏற்படும் அறிகுறிகள் என்ன?

அ) பேச்சுக்குளறல் மற்றும் பக்கவாதம்

ஆ) மூச்சுத்திணறல்

இ) சுயநினைவின்மை

ஈ) மேற்கூறிய அனைத்தும்

14. இரத்த உறை தடுப்பு மருந்தின் அளவு அதிகரிப்பதால் ஏற்படும் அறிகுறிகள் என்ன?

அ) ஈறுகளில் இரத்தக்கசிவு

ஆ) சிவப்பு நிற சிறநீர்

இ) சிவப்பு அல்லது கறுப்பு மலம்

ஈ) மேற்கூறிய அனைத்தும்

15. இரத்த உறைதடுப்பு மருந்து உட்கொள்ளும் போது ஏற்படும் பின்விளைவுகள் என்ன?

அ) எளிதாக இரத்தம் கசிய வாய்ப்பு

ஆ) நெஞ்சுவலி

இ) தலைவலி

ஈ) மயக்கம்

16. இரத்த உறைதடுப்பு மருந்து உட்கொள்ளும் போது தவிர்க்க வேண்டிய செயல்கள் என்ன

அ) மலம் கழிக்கும் போது சிரமப்படுவது
ஆ) வெட்டுக்காயங்கள் மற்றும் கீழே விழுதல்
இ) தோட்ட வேலை மற்றும் தையல் வேலை
ஈ) மேற்கூறிய அனைத்தும்

17. இரத்தக்கசிவு ஏற்புடும் போது செய்ய வேண்டிய முதலுதவி என்ன?

அ) ஓடும் நீரில் காயத்தை கழுவவும்
ஆ) காயத்தில் அழுத்தம் கொடுக்கவும்
இ) காயம் ஏற்பட்ட இடத்தை உயர்த்தி வைக்கவும்
ஈ) மேற்கூறிய அனைத்தும்

18. இரத்த உறைதடுப்பு மருந்து எடுத்துக் கொள்ளும் போது எவ்வாறு உடலின் எடையை பராமரிக்கலாம்?

அ) எடையை அதிகரித்தல்
ஆ) எடையை குறைத்தல்
இ) நிலையான உடல் எடை
ஈ) நிலையற்ற உடல் எடை

19. இரத்த உறைதடுப்பு மருந்து உட்கொள்ளுவதை பற்றி பல் மருத்தவர் மற்றும் மற்ற மருத்துவர்களிடம் எப்பொழுது தெரிவிக்க வேண்டும்

அ) சிகிச்சைக்கு முன்
ஆ) தெரிவிக்க அவசியமில்லை
இ) சிகிச்சையின் போது
ஈ) பின் விளைவுகள் ஏற்பட்ட பிறகு

20. இரத்த உறைதடுப்பு மருந்து உட்கொள்ளும் போது என்னென்ன வாழ்க்கை முறை மாற்றங்களை கடை பிடிக்க வேண்டும்?

அ) புகை மற்றும் குடிபழக்கத்தை தவிர்த்தல்
ஆ) புகைப்பழக்கத்தை தவிர்த்தல்
இ) குடிப்பழக்கத்தை தவிர்த்தல்
ஈ) துரித உணவுகளை தவிர்த்தல்

APPENDIX-D1

INTERVENTION IN ENGLISH

STRUCTURED TEACHING PROGRAMME ON ANTICOAGULANT DRUG COMPLIANCE

Place : Cardio thoracic wards of GKNM Hospital

Group : Patients with mechanical heart valves on anticoagulant drug therapy

Method of teaching : Lecture cum Discussion

A.V aids : Power point slides

Educator : Ms. Jenifer. D

INTRODUCTION

I am IIyear M.Sc(N) Student of G. Kuppusamy Naidu Memorial Hospital, Institute of Nursing, Coimbatore. Now I am going to discuss about Heart, Heart valves, Blood coagulation, Laboratory investigations done for mechanical heart valve patients, Anticoagulant drug, Dosage, Importance of drug, side effects, precautions and Lifestyle modification for patients taking anticoagulants.

HEART

Heart is a hollow muscular organ, the heart pumps blood to the tissues supplying oxygen and nutrients. An adult human body has about 4-6 liters of blood. There are four heart valves in a healthy human heart. The valves help to maintain proper blood flow through the heart, keeping blood moving efficiently and smoothly, and in the right direction, if the valves get narrow or leak, if the valves are diseased beyond repair they need to be replaced. Replacement can be done by artificial valves;

Artificial valves are classified in to two groups

1) **Biological valves** : derived from human or animal source.

2) **Mechanical valves** : derived from metal or plastic.

ARTIFICIAL VALVES:

Artificial valves are in direct contact with blood. Blood exposed to any artificial material can clot. Blood clots can block an artery or a vein (blood vessels). A blocked artery stops blood and oxygen from getting to a part of the body (for example, to a part of the heart, brain or lungs). The tissue supplied by a blocked artery becomes damaged, or dies, and this results in serious problems such as a stroke.

BLOOD COAGULATION:

Within seconds of cutting a blood vessel, the damaged tissue causes platelets (tiny cells in the blood) to become sticky and clump together around the cut. These activated platelets and the damaged tissue release chemicals which react with other chemicals and proteins in the blood, called clotting factors. Naturally the vitamin K helps the blood to clot in Human body.

LABORATORY INVESTIGATION:

An anticoagulant helps the body to control how fast your blood clots; therefore, it prevents clots from forming inside your arteries, veins or heart. The effect of anticoagulants must be monitored carefully with blood testing. On the basis of the results of the blood test, daily dose of anticoagulant will be adjusted to keep clotting time within a target range. The blood test used to measure the time it takes for blood to clot is referred to as prothrombin time test, or protime (PT).The normal value of Prothrombin time is 11.5-18sec. The PT is reported as the International Normalized Ratio(INR).

The INR ensures that PT results obtained by different laboratories can be compared. It is important to monitor the INR (at least once a month and sometimes as often as twice weekly) to make sure that the level of warfarin remains in the effective range. The normal INR range in patients taking warfarin is 2.0-3.0, if the INR is too low, blood clots will not be prevented, but if the INR is too high, there is an increased risk of bleeding. This is why those who take anticoagulant must have their blood tested frequently. Once the dose of anticoagulant is stabilized the Prothrombin test can be done once in three months. Go to the same laboratory each time.

ANTICOAGULANTS:

Anticoagulants are medicines that prevent the blood from clotting as quickly or effectively as normal, and makes the blood thinner, So that the blood does not clot over the artificial valve. They act by blocking Vitamin K which is essential for normal clotting.

STORAGE:

Keep this medication in dry place at room temperature, and out of reach of children, away from excess heat, moisture and light. Throw away any medication that is outdated or no longer needed.

DOSAGE:

Dosage of anticoagulant needs to be adjusted, Depending on the type of valve replaced.Some people need to take it for a few weeks (after surgery) or months (deep vein thrombosis).some people need to take an anticoagulant for the rest of their lives.

- You should aim to take anticoagulants at the same time each day. This is usually six o'clock in the evening.
- The medication can be taken after food.
- If you accidentally miss a dose, NEVER take a double dose, Skip it, Take the dose as instructed once a day. If you forget to take your dose and remember within 8 hours, take the dose. If it is past 8 hours, wait until the next day and take only the prescribed dose for that day. DO NOT TAKE A DOUBLE DOSE.
- If you forget two or more days in a row, call your doctor. The dose may need to be changed.
- When you take the dose, check off the day on your home calendar, or Diary.
- A timely reminder (telephone) of follow-up visits can be provided.
- Refill your prescription 1 week before the end of your supply to avoid missing a dose.
- Continue to take warfarin (Coumadin) as long as your doctor prescribes it (life long).
- Carry an identification card or wear a bracelet stating that you take

anticoagulants, List your name, medical problems, medications dosages, doctor's name and telephone number on the card.

- If an accident occurs and you are too ill to communicate, a medical alert tag will help responders to provide appropriate care.
- Do not let anyone else to take your medication.
- It is important for you to keep a written list of all of the prescription and nonprescription (over-the-counter) medicines you are taking.

The Lowering dose of anticoagulant causes:

- change in intensity of valve sounds
- Difficulty in Breathing
- Unconsciousness' or Giddiness
- Limb weakness or Stroke
- Slurring of Speech

Symptoms of overdose may include the following:

Higher dose can make the blood too thin cause bleeding.

- ✓ Bloody or red, or tarry bowel movements
- ✓ Spitting or coughing up blood
- ✓ Heavy bleeding with your menstrual period
- ✓ Pink, red, or dark brown urine
- ✓ Coughing up or vomiting material that looks like coffee grounds
- ✓ Small, flat, round red spots under the skin
- ✓ Unusual bruising or bleeding
- ✓ Continued oozing or bleeding from minor cuts

The common **side effect** of anticoagulant drug is the tendency to bleed easily.

If any of the following serious bleeding side-effects occur while taking an anticoagulant, see a doctor urgently and have a blood test:

THE FIRST AID MEASURE TO BE DONE FOR MINOR BLEEDING:

- Wash with running water
- Apply pressure on the bleeding area.
- Elevate the affected area.
- If bleeding does not stop by itself consult the Doctor.

SIMPLE MEASURES TO DECREASE THE RISK OF BLEEDING WHILE TAKING ANTICOAGULANTS INCLUDES THE FOLLOWING:

- Use a soft-bristled toothbrush
- Floss with waxed floss rather than unwaxed floss
- Shave with an electric razor rather than a blade
- Take care when using sharp objects, such as knives and scissors
- Try to avoid insect bites. Use a repellent when you are exposed to insect bites.
- Avoid activities that have a risk of falling or injury (e.g., contact sports)
- Avoid straining while defecation
- Avoid Gardening and Sewing.

GUIDELINES TO FOLLOW WHILE TAKING MEDICATIONS:

- Avoid grapefruit and cranberry products.
- If you eat spinach, turnip greens, other leafy greens, broccoli, Brussels sprouts, kale, parsley, liver, or green tea, be sure to eat a consistent amount week to week.
- Eat all other foods as you normally would.
- Tell your doctor if you are thinking about changing your current eating habits. Tell your doctor if you are planning to:
- Eat more or less vegetables.
- Change to a vegetarian style of eating.

PROSTHETIC HEART VALVE INFECTION:-

Any foreign body placed inside the body is subject to the possibility of becoming infected. Certain precautions should be taken to reduce risk. Any fever that was experienced should be reported to your physician. Any prolonged incident (more

than two or three days) of sinusitis or upper respiratory symptoms such as a cold or flu should be reported to physician. Remind him/her that you have a prosthetic heart valve. He/she may conduct tests to rule out prosthetic heart valve infection. You can minimize the chance of infection occurring by keeping all your physicians informed that you have a heart valve prosthesis implanted. Inform dentist, before any dental procedure carries the risk of infecting prosthesis. Dentist will prescribe an important antibiotic treatment prior to dental appointments, which helps to avoid infection.

LIFE STYLE MODIFICATIONS: -

WEIGHT: Avoid gaining Weight while on anticoagulants, it increases the drug dose requirement and makes heart to strain.

ALCOHOL: Alcohol intake can affect how the body metabolizes anticoagulants. Patients taking anticoagulants should avoid alcoholic beverages such as beer and wine, according to the Agency for Healthcare and Research Quality, Alcohol increases the risk of gastrointestinal bleeding in patients taking anticoagulants. Signs of gastrointestinal bleeding include vomits that look like coffee grounds, dark stool, coughing blood, abdominal tenderness, weakness and dizziness.

SMOKING: Stop smoking. It can affect the action of anticoagulants.

EXERCISE: Check with your doctor before starting any exercise or sports program.

TRAVEL: Check with your healthcare provider if you expect to travel. While traveling, it is important to carry your medication with you at all times. Do not put medication into checked baggage

SUMMARY AND CONCLUSION:-

So far we have discussed about the heart, heart valves, Blood coagulation, Laboratory investigation, Anticoagulants, storage, dosage, symptoms of over dose & lower dose, first aid measures to be done for bleeding and Life style modifications for patients with mechanical valve taking anticoagulants. Thank You.

APPENDIX-D2

INTERVENTION IN TAMIL

இரத்த உறை தடுப்பு மருந்து பற்றிய வடிவமைக்கப்பட்ட போதனை முறை பாடதிட்டம்

முன்னுரை:-

வணக்கம் நான் ஜி. குப்புசுவாமி நாயுடு நினைவு மருத்துவமனை செவிலியர் கல்லூரியில் எம்.எஸ்.சி பயிலும் மாணவி இப்பொழுது நான் உங்களிடம் கூறப்போவதாவது இருதயம், இருதயவால்வுகள், இரத்த உறைதல், மாற்று வால்வு பொருத்தபட்டவர்களுக்கு செய்யப்படும் ஆய்வக பரிசோதனை, இரத்த உறை தடுப்பு மருந்து, அதன் அளவு, அம்மருந்தின் முக்கியத்துவம், பின்விளைவுகள், அதை தடுப்பதற்கான வழிமுறைகள், மற்றும் இரத்த உறை தடுப்பு மருந்தை உட்கொள்பவர்கள் செய்ய வேண்டிய வாழ்க்கை முறை மாற்றங்கள் ஆகியவைகளாகும்.

இருதயம்:-

இருதயம் என்பது தசைகளால் ஆன ஒரு உறுப்பு. இருதயமானது சுருங்கி விரிந்து உடலுக்கு தேவையான இரத்தத்தை கொடுக்கிறது. இதன் மூலமாக உடலின் செல்கள் ஆக்சிஜன் மற்றும் ஊட்டச்சத்துக்களை பெற்றுக்கொள்கிறது. ஒரு சராசரி மனிதனின் உடலில் சுமார் 4 – 6 லிட்டர் இரத்தம் உள்ளது. இதய வால்வுகள் சரியான முறையில் இரத்த ஓட்டத்தை பாரமரிக்க உதவுகிறது. இது இரத்த ஓட்டத்தை சீராகவும் சரியான திசையிலும் செல்ல உதவுகிறது.

இதய வால்வுகளில் நோய் ஏற்பட்டால் வால்வுகளில் சுருக்கமோ அல்லது கசிவோ ஏற்படும், பழுதுபார்த்தும் சரியாகாத நிலையில் அறுவை சிகிச்சை செய்து வால்வை மாற்ற வேண்டும். இதற்கு செயற்கை வால்வுகள் பயன்படுத்தப் படுகிறது அவை இரண்டு வகைபடும்.

1. **உயிரியல் வால்வுகள்** மனித அல்லது விலங்குகளிடமிருந்து பெறப்படுகின்றன
2. **மெக்கானிக்கல் வால்வுகள்** பிளாஸ்டிக் அல்லது உலோகத்திலிருந்து பெறப்படுகின்றன

செயற்கை வால்வுகள்/மாற்று வால்வுகள் :-

மாற்றபட்ட இதயவால்வுகள் இரத்த ஓட்டத்துடன் நெருங்கிய தொடர்பு கொண்டுள்ளன. எந்த செயற்கை பொருளுடனும் இரத்தம் தொடர்பு கொண்டால் இரத்தம் உறைய வாய்ப்பு உண்டு. இது இரத்தகட்டிகளாக மாறி இரத்த நாளங்களை அடைக்கலாம். எப்பகுதியில் அடைப்பு ஏற்பட்டுள்ளதோ அப்பகுதிக்கு இரத்தம் மற்றும்

ஆக்ஸிஜன் கிடைப்பது நின்று போய் விடுகிறது (எ.கா.) நுரையீரல், மூளை மற்றும் இருதயத்தின் ஒருபகுதி இதனால் அப்பகுதியில் உள்ள திசுக்கள் பழுதடைந்தோ அல்லது இறந்தோ போய் விடுவதால் பக்கவாதம் போன்ற கடுமையான பிரச்சனைகள் ஏற்படுகிறது. இவை உயிருக்கு ஆபத்தானவை.

இரத்தம் உறைதல்:-

இரத்த நாளங்களில் காயம் ஏற்பட்ட ஒரு சில வினாடிகளுக்குள்ளேயே சேதமடைந்த திசுவானது இரத்ததட்டுகளை ஒன்றாகவும் ஒட்டும் தன்மையுடையதாகவும் மாற்றி காயமடைந்த இடத்தை சூழ்ந்து கொள்ள செய்கிறது. இந்த இடத்தில் இரத்த தட்டுகள் மற்றும் காயமடைந்த திசுக்கள் ஒருவிதமான வேதிப் பொருளை வெளியிடுகிறது. இந்த வேதிபொருள் இரத்தத்தில் மற்ற வேதி பொருட்களுடன் சேர்ந்து இரத்த உறைதலை உண்டாக்குகிறது. இதுவே இரத்த உறைதலுக்கான காரணிகள் எனப்படுகிறது. இயற்கையாகவே நமது உடலில் வைட்டமின் ‘‘கே’’ இரத்த உறைதலுக்கு உதவுகிறது.

ஆய்வக பரிசோதனை:-

இரத்த உறை தடுப்பு மருந்து இரத்த உறைதலை தடுப்பதால் உடலில் உள்ள சிரைகள், தமனிகள் மற்றும் இதயத்தில் இரத்தம் உறைவதை தடுக்கிறது. இரத்த உறை தடுப்பு மருந்தின் விளைவை இரத்த பரிசோதனை செய்வதன் மூலமாக மிகவும் கவனமாக கண்காணிக்க வேண்டும். இரத்த பரிசோதனை முடிவின் அடிப்படையில் இரத்த உறைதலுக்கான நேரத்தை சரியான அளவில் வைத்து கொள்வதற்காக தினசரி எடுத்து கொள்ளப்படும் இரத்த உறை தடுப்பு மருந்தின் அளவை மாற்றி அமைக்கலாம். இரத்தம் உறைவதற்காக எடுத்து கொள்ளும் நேரத்தின் அளவை அளப்பதற்காக செய்யப்படும் பரிசோதனையே புரோதோரம்பின் நேர சோதனை ஆதன் சரியான முடிவு 11.5-18 வினாடி ஆகும். இரத்த பரிசோதனை முடிவுகளை சீராக்க தரமான பரிசோதனை கூடங்கள் முடிவுகளை ஐ .என் .ஆர் என்ற அளவு கோலால் குறிக்கின்றன. ஐ என் ஆர் என்பது இன்டர் நேஷனல் நார்மலைஸ்டு ரேஸ்யோ, இரத்த உறை மருந்தை எடுக்கும் நபருக்கான சரியான முடிவு 2.0 – 3.0 நொடிகள் ஐ என் ஆர் ன் அளவு மிக குறைவாக இருக்கும் போது இரத்த உறைதல் ஏற்படுகிறது. ஆனால் மிக அதிகமாக இருக்கும்போது இரத்தக் கசிவு ஏற்படுவதற்கான வாய்வுகள் அதிகரிக்கிறது. எனவே தான் இரத்த உறை தடுப்பு மருந்தை எடுக்கும் நபர் அடிக்கடி இரத்த பரிசோதனை செய்துகொள்வது மிகவும் அவசியமான ஒன்றாக கூறப்படுகிறது. உடலுக்கு தேவையான மாத்திரையின் அளவும் இரத்த பரிசோதனை முடிவும், சமநிலை எட்டிய பின்னர் பரிசோதனை மூன்று மாதத்திற்கு ஒரு முறை செய்தால் போதுமானது. ஒரே பரிசோதனை கூடத்தில் பரிசோதனை செய்து கொள்வது நல்லது.

இரத்த உறை தடுப்பு மருந்து:

இரத்த உறை தடுப்பு மருந்து இரத்தம் இயற்கையாக உறைவதை தடுப்பதுடன் இரத்தத்தின் திரவநிலையை மேலும் இலகுவாக்குகிறது. இதனால் செயற்கை வால்வுகளில் இரத்த உறைதல் ஏற்படுவதில்லை அத்துடன் இது இரத்த உறைதலுக்கு உதவும் விட்டமின் கே யின் செயல்பாட்டையும் தடுக்கிறது.

பாதுகாத்து வைத்தல்:-

- ✓ இந்த மருந்தை அறைவெப்பநிலையில் உலர்ந்த இடத்திலும் குழந்தைகளுக்கு எட்டாதவாறு அதிக அளவு வெப்பம் ஈரப்பதம் மற்றும் ஒளி இல்லாத இடத்திலும் பாதுகாப்பாக வைக்க வேண்டும்.
- ✓ காலாவதியான எந்த மருந்துகளையும் பயன்படுத்தகூடாது

இரத்த உறை தடுப்பு மருந்தின் சரியான அளவு:-

- ➢ மாற்றியமைக்கப்பட்ட வால்விற்கு ஏற்றவாறு இரத்த உறைதலுக்கான மருந்தை சரிசெய்து கொள்ள வேண்டும்.
- ➢ ஒரு சிலர் தங்களுடைய வாழ்நாள் முழுவதும் இந்த மருந்தை எடுத்துகொள்ள வேண்டும்.
- ➢ நீங்கள் இரத்த உறை மாத்திரையை ஒவ்வொரு நாளும் குறிப்பிட்ட அதே நேரத்தில் வழக்கமாக எடுத்துக் கொள்ள வேண்டும். வழக்கமாக மாலை ஆறு மணிக்கு எடுத்து கொள்ளலாம்.
- ➢ உணவிற்குபின் மாத்திரையை உட்கொள்ள வேண்டும். நீங்கள் தற்செயலாக மாத்திரையை எடுத்துக் கொள்ளத் தவறிவிட்டால் அன்றைய நாளுக்குரிய மாத்திரையை விட்டு விட வேண்டும்.
- ➢ மறுநாள் தவறிய மாத்திரையும் சேர்ந்து எடுத்துக் கொள்ள கூடாது. ஒரு நாளைக்கென்று பரிந்துரைக்கபட்ட மாத்திரையே ஒரு நாளைக்கு எடுத்துக்கொள்ள வேண்டும்.
- ➢ மாத்திரையை சாப்பிட மறந்த எட்டு மணிநேரத்திற்குள் ஞாபகம் வந்தால் உடனே மாத்திரையை எடுத்துக் கொள்ளலாம் ஆனால் இரண்டு மாத்திரையாக சாப்பிட கூடாது.
- ➢ இரண்டு அல்லது இரண்டு நாட்களுக்கு மேல் நீங்கள் மாத்திரையை எடுக்க தவறிவிட்டால் உடனடியாக உங்கள் மருத்துவரை அணுக வேண்டும்.
- ➢ மருத்துவர் மாத்திரையின் அளவை மாற்றியமைக்கலாம்.
- ➢ நீங்கள் தினசரி மருந்து எடுத்துக் கொள்ளும் போது கால அட்டவணையிலோ அல்லது டைரியிலோ குறித்துக் கொள்ள வேண்டும்.

- மாத்திரைகள் எடுக்க தவறிவிடாமல் இருப்பதற்கு உங்கள் மாத்திரைகள் தீர்ந்து போவதற்கு 1 வாரத்திற்கு முன்னதாகவே தேவையான மாத்திரைகளை வாங்கி வைத்து கொள்ள வேண்டும்
- உங்களது மருத்துவர் பரிந்துரைத்த நாள் வரைக்கும் இரத்த உறைதடுப்பு மாத்திரையை தொடர்ந்து எடுக்க வேண்டும்.
- இரத்த உறைதடுப்பு மாத்திரையை எடுத்துக்கொள்ளும் நபர் அடையாள அட்டையோ கையில் அணியும் காப்பையோ எப்பொழுதும் தங்களுடன் வைத்துக் கொள்ள வேண்டும்.
- அதில் அவரது பெயர் மருத்துவ பிரச்சனைகள் மாத்திரையின் பெயர் மற்றும் அளவு மருத்துவரின் பெயர் மற்றும் தொலைபேசி எண் போன்றவற்றை குறித்துக் கொள்ள வேண்டும்.
- ஏதேனும் விபத்து ஏற்பட்டால் அந்நேரத்தில் இந்த அட்டை உதவியாக அமையும்.
- உங்களது மாத்திரையை மற்றவற்கள் எடுப்பதற்கு அனுமதிக்கக் கூடாது
- உங்களது மருத்துவர் பரிந்துரைந்த மாத்திரைகளின் பட்டியலையும் நீங்கள் வழக்கமாக எடுக்கும் மாத்திரைகளின் பட்டியலையும் கவனமாக வைத்து கொள்ள வேண்டும்.

மாத்திரையின் அளவு குறைவதால் ஏற்படும் அறிகுறிகள்:-

- மாற்று வால்வு ஏற்படுத்தும் சத்தம் குறைதல்
- மூச்சு விடுதலில் சிரமம் தலை சுற்றல்
- மயக்கம் (அ) சுயநினைவிழத்தல்
- கைகால் தளர்ச்சி மற்றும் செயலிழப்பு
- பேச்சு குளறல்

மாத்திரையின் அளவு அதிகரிப்பதால் ஏற்படும் அறிகுறிகள்:-

- மாத்திரையின் அளவு கூடினால் இரத்தத்தின் திரவுநிலை அதிகரிக்கிறது இதனால் இரத்தக் கசிவு ஏற்படுகிறது
- சிகப்பு (அ) கறுப்பு நிற மலம் கழித்தல்
- எச்சில் (அ) இருமலின் போது இரத்தம் வருதல்
- மாதவிடாயில் அதிக இரத்த போக்கு
- சிகப்பு (அ) கறுப்பு நிற சிறுநீர்
- காப்பி நிற வாந்தி எடுத்தல்
- சிறிய தட்டையான வட்டமான சிவப்பு புள்ளிகள் தோலுக்கு அடியில் காணப்படுதல்
- சிறிய வெட்டுகாயங்களில் இருந்து தொடர் இரத்தகசிவு

- அசாதரணமான இரத்த கசிவு மற்றும் இரத்த உறை தடுப்பு மருந்து எடுப்பதால் பொதுவாக இரத்த கசிவு போன்ற பக்க விளைவுகள் ஏற்பட வாய்ப்புகள் உள்ளன.
- இரத்த உறைதடுப்பு மருந்து எடுக்கும் போது மேற்கூறிய அறிகுறிகள் ஏதேனும் தோன்றினால் உடனடியாக மருத்துவரை அணுகி இரத்த பரிசோதனை செய்ய வேண்டும்.

சிறிய காயங்களில் இருந்து ஏற்படும் இரத்தக்கசிவை நிறுத்த செய்யப்படும் முதலுதவி:-

- காயம் ஏற்பட்ட இடத்தை ஓடும் நீரில் கழுவ வேண்டும்
- நன்கு அழுத்தம் கொடுக்க வேண்டும்
- காயம் ஏற்பட்ட இடத்தை உயர்த்தி வைக்க வேண்டும்
- இந்த முதலுதவியின் பின் இரத்தக் கசிவுதொடர்ந்து ஏற்பட்டால் மருத்துவரை அணுக வேண்டும்.

இரத்த உறைதடுப்பு மருந்துகளை எடுத்துக் கொள்ளும் பொழுது இரத்தக்கசிவை தடுப்பதற்கான சில எளிய வழிமுறைகள்:-

- ✓ மென்மையான நரம்புகள் உள்ள பல்துலக்கியை பயன்படுத்துதல்
- ✓ மழித்தெடுத்த பல்குத்தி மூலம் பற்களின் ஈறுகளை சுத்தம் செய்யவும்
- ✓ பிளேடை பயன்படுத்தி சவரம் செய்வதை விட மின்சார ரேஸர் கொண்டு சவரம் செய்யவும்
- ✓ கத்தி மற்றும் கத்திரிகோல் போன்ற கூர்மையான பொருட்களை கவனமாக கையாள வேண்டும்
- ✓ கொசுக்கள் போன்ற பூச்சிகடிகளை தவிர்க்க தடுப்பு முறைகளை கையாள வேண்டும்
- ✓ கீழே விழுதல் மற்றும் காயம் ஏற்படுதலை தவிர்க்க வேண்டும்
- ✓ சிரமப்பட்டு மலம் கழித்தலை தவிர்க்க வேண்டும்
- ✓ தோட்ட வேலை மற்றும் தையல் வேலைகளை தவிர்க்க வேண்டும்

இரத்த உறைதடுப்பு மருந்தை எடுக்கும் போது கையாள வேண்டிய உணவுப் பழக்கவழக்கங்கள்:-

- ✓ திராட்சைப்பழம் மற்றும் குருதிநெல்லி உணவுப் பொருட்களை தவிர்க்க வேண்டும்
- ✓ கீரைவகைகள், முளைகட்டிய பயிறு, முட்டைகோஸ், முள்ளங்கி, பச்சை காய்கறிகள், கல்லீரல் மற்றும் பச்சை தேயிலை போன்றவைகளை ஒரே அளவில் உட்கொள்ள வேண்டும்.

- ✓ உங்கள் தற்போதைய உணவு பழக்கமுறையை மாற்ற விரும்பினால் உங்கள் மருத்துவரிடம் தெரிவிக்க வேண்டும்
- ✓ வழக்கமாக சாப்பிடும் உணவுகளை எப்பொழுதும் போல் எடுத்துக் கொள்ளலாம்
- ✓ குறைந்த அளவோ அல்லது அதிக அளவோ பச்சைக் காய்கறிகள் உட்கொண்டால் அதையும் மருத்துவரிடம் கூறவும்
- ✓ சைவ உணவுப் பழக்கத்தை கடைபிடிடிக்கவும்

செயற்கை வால்வு (நோய்) கிருமி தாக்குதல்:-

உடம்பினுள் எந்த விதமான செயற்கை பொருட்கள் வைக்கப்படும் போதும் கிருமிகள் தாக்குவதற்கான வாய்ப்பு உள்ளது. இதை தடுப்பதற்கு ஒரு சில வழிமுறைகளை மேற்கொள்ள வேண்டும். எந்த விதமான காய்சலினாலோ (அ) சளிபிடித்தல் போன்ற மூச்சுகுழாய் தொடர்புடைய நோயினாலோ பாதிக்கபட்டால் உடனடியாக மருத்துவரை அணுகவும். அம்மருந்துவரிடம் உங்களுக்கு செயற்கை வால்வு பொருத்தப்பட்டிருப்பதை தெரிவிக்கவும். இதன் மூலம் செயற்கை வால்வில் நோய் கிருமி தாக்கியுள்ளதா என்று பரிசோதனை செய்து கண்டறிய முடியும். குறிப்பாக உங்களுக்கு செயற்கை வால்வு பொருத்தப்பட்டிருப்பதை எந்தவித பல் சிகிச்சைக்கு முன்பும் பல் மருத்துவரிடம் தெரிவிப்பது அவசியம். இதன் மூலம் கிருமிகள் வால்வை பாதிக்காதிருக்க நுண்ணுயிர் கொல்லிகள் போன்ற மருந்துகளை பரிந்துரைப்பார்.

வாழ்க்கை முறை மாற்றங்கள்:-

உடல் எடை : இரத்த உறை தடுப்பு மருந்து உட்கொள்ளும் பொழுது அளவுக்கு அதிகமாக எடை கூடினால் இருதயத்தின் செயல்பாட்டில் சிரமம் ஏற்படும் மாத்திரையின் தேவையும் அதிகரிக்கும்.

மது அருந்துதல் : மது அருந்துவது இரத்த உறை தடுப்பு மருந்தின் செயல்பாட்டை பாதிக்கிறது எனவே மது அருந்துவதை தவிர்க்க வேண்டும். மது அருந்துபவர் இரத்த உறை தடுப்பு மருந்தினை உட்கொள்ளும் போது உணவு குழாயில் இரத்தகசிவு ஏற்படுவதற்கான வாய்ப்பு அதிகமுள்ளது. உணவுக் குழாயில் இரத்த கசிவினால் ஏற்படும் அறிகுறகளாவன வாந்தி (காப்பி நிறம்), கறுப்பு நிற மலம், இரத்தத்துடன் கூடிய சளி, வயிற்றுவலி, பலவீனம், மயக்கம்.

புகைபிடித்தல : புகைபிடிப்பதை தவிர்க்க வேண்டும்,புகை பிடித்தல் இரத்த உறை தடுப்பு மருந்தின் செயல்பாட்டினை தடுக்கும்.

உடற்பயிற்சி : எந்த விதமான விளையாட்டுகளையோ (அல்லது) உடற்பயிற்சியையோ துவங்குவதற்கு முன் மருத்துவரின் ஆலோசனை பெற வேண்டும்.

பயணம் : நீண்ட தூர பயணத்திற்கு முன் மருந்துவரின் ஆலோசனை பெற்று கொள்வதுடன் உங்களது மருந்துகளை உடன்எடுத்து செல்வது மிக அவசியம்

முடிவரை:

இதுவரை நாம் இருதயம் இருதய வால்வுகள் செயற்கை வால்வுகள் இரத்த உறைதல் இரத்த உறை தடுப்பு மருந்தை உட்கொள்பவர்கள் செய்ய வேண்டிய ஆய்வக பரிசோதனை மற்றும் அம்மருந்தின் அளவு முக்கியத்துவம் இரத்தத்தில் அம்மருந்தின் அளவு அதிகரிப்பதாலோ அல்லது குறைவதாலோ ஏற்படும் அறிகுறிகள் இரத்தகசிவு ஏற்படும் போது செய்ய வேண்டிய முதலுதவி செயற்கை வால்வு பொருத்தப்பட்டு இரத்த உறை தடுப்பு மருந்து உட்கொள்பவர்கள் கடைபிடிக்க வேண்டிய வாழ்க்கை முறைகள் பற்றி இதுவரை பார்த்தோம். நன்றி.

APPENDIX – E

PLAGIARISM REPORT

How does Viper work.....?

[+] Read more..http://www.scanmyessay.com/

Plagiarism Report For 'Jenifer.docx'

Words matched: 234

Match %: 4

Unique words matched: 159

Unique match % : 2

Matching Content : 2%

Checked on – 05/02/14.

Signature of the candidate **Signature of the principal**

APPENDIX – F

PHOTOGRAPHS

DATA COLLECTION